

ISLAMIC PERSPECTIVES IN MEDICINE

*A Survey of "Islamic Medicine":
Achievements and Contemporary Issues*

Shahid Athar, M.D. (ed.)

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Shahid Athar, M.D.

DEDICATION

THIS BOOK IS DEDICATED TO THE TORCH-BEARERS OF ISLAMIC MEDICINE, THE MUSLIM PHYSICIANS OF THE PAST, THE PRESENT AND THE FUTURE.

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FOREWORD

As I present this collection of articles, many of which were published in the Journal of Islamic Medical Association over the past several years on the art and science of Medicine in Islamic period 600-1200 A.D., a few words by way of explanation may be in order.

In scientific circles, it is believed and taught that Muslim contribution in the field of medicine was mainly in the area of preservation and compilation of previous knowledge. In their *History of Medicine*, Lyons and Pettrollis (publisher, Abrahams), describe Islamic Medicine as "Arabic Medicine". Another historian commented, "Certainly they (Muslim physicians) contributed no original or novel ideas to develop Hippocratic thought; but in a period of unrest (the dark ages) they were the preservers of knowledge."

As my generation grew up in high schools, colleges, and universities, we were taught the various contributions of western scientists from Newton to Einstein, but we were never told anything about contributions of early Muslim scientists in chemistry, astronomy, mathematics, and other fields. During my five years study in medicine in a Muslim country, we never had even a single lecture on contributions of Muslims in the science of Medicine.

It was not until I started studying Islamic history on my own that I found these brilliantly written articles on the history of Islamic medicine. It is little wonder that we find both Muslims and non-Muslims alike ignorant of the glorious achievements of Muslims in the field of medicine. This collection of articles will, I hope, go some way in creating a better understanding of Muslim contribution in medicine. The present collection covers history, art, and principles of Islamic medicine vis-a-vis some of the modern issues, including Medical Ethics.

The articles in this collection are arranged in three sections:

- a) History of medicine in the glorious Islamic period,
- b) Principles and practice of medicine in Muslim history,
- c) Islamic perspectives on contemporary issues in medicine.

I thank the authors and the publishers for their permission to use these articles. I am also grateful to Hakim Mohammed Said for his advice and for writing the preface to the first edition. My special gratitude to my associate, Moazzam W. Habib, M.D., for reviewing the manuscript.

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INTRODUCTION

WHAT IS ISLAMIC MEDICINE?¹

Dr Ahmed El-Kadi

With the growing movement for the restoration of Islamic values, there is an increasing demand on Muslim scientists to restore and develop the Islamic sciences. It is essential, however, for the Muslim scientist to have a clear and sound understanding of the science he is expected to restore and develop. The majority of Muslim health professionals have no clear idea as to what Islamic medicine is. Even the ones who have an idea may differ in their concept and definition of Islamic medicine.

What is Islamic medicine? Is it the old medicine, still being practiced by some Hakims in the east? Is it natural medicine utilizing mostly herbs, diets, and lifestyle adjustments? Is it a medicine limited to the health related teachings found in the Qur'an and the prophet's tradition? Is it primarily faith-healing and prayers for the sick? Is it customary medicine given an Islamic label? Or is it some new discovery providing a cure for almost all ills? None of the above is in itself Islamic Medicine, but all together, and a great deal more, are its ingredients. According to Islamic teaching, God has made available a treatment for every illness He has created.² This teaching implies that every available and useful treatment known to us should be utilized, and that if a treatment for a certain illness is not yet known to us, it is our duty to search for it until we find it. Therefore Islamic medicine cannot be limited to any branch of the healing arts which does not have the answer, or at least the potential to have the answer, to all illnesses. The treatment in question may be spiritual or physical exercise, nutritional adjustment, pharmaceutical preparation, be it all natural ingredients or purely synthetic, surgical procedure, radiation therapy, or a combination of any of these modalities.

Although Islamic Medicine may include, among many others, all the

¹Presented at first International Conference On Islamic Medicine, Kuwait, January 1980

² Sahih Al-Bukhari, LXXI. The Book of Medicine, Chapter 1.

modalities of modern medicine, it differs from modern medicine in that it fulfills all the following six criteria: it is excellent and advanced compared to other brands of the healing arts; it is a medicine based on faith and Divine ethics; it is guided and oriented; it is comprehensive, paying attention to the body and the spirit, to the individual and the society; it is universal, utilizing all useful resources, and offers its services to all mankind; and last, but not least, it is scientific.

While modern medicine proclaims these criteria, i.e. to be excellent, ethical, oriented, comprehensive, universal, and scientific, it has failed to fulfill any of them. An examination of modern medicine with regard to these six criteria will show how poorly it rates. Statistics from the United States of the last decade will be used as representative of modern medicine.

The first criterion is excellence. Performance of modern medicine will be evaluated according to its ability to save life, to eradicate or control disease, and to improve personal well-being.

Modern medical statistics may give the impression that the average age of the population has been extended, and that more lives are being saved. A key figure in mortality statistics is infant mortality since it affects total mortality figures and also the average age of the population. Infant mortality for 1978 is presented as 22,010, which is a great improvement over the 43,205 reported for 1970.³ For some reason, however, modern medical statistics completely ignore the huge figure of 1,150,776 babies who died in 1978 during their first nine months of life, and who were classified as abortions and not as a mortality. This 1978 figure represents an almost 600% increase over the 1970 figure of just 193,491.⁴ Counting all dead babies will change infant mortality numbers from 1,172,786 in 1978 as opposed to just 236,696 in 1970. As to mortality due to other leading causes of death, the progress made by modern medicine in some areas was almost canceled out by the deterioration in other areas (Table 1). All areas combined, but without counting abortions, the mortality figure of 1,809,818 in 1970 decreased to 1,776,390 in 1978, or a meager 1.8% improvement. Counting abortions, true total mortality was 2,003,309 in 1970 and 2,927,166 in 1978, or a 46% difference. As to eradication or control of disease, modern medicine has made a few steps forward in a few areas, and many more steps backward in other areas (Table 2). The total incidence of the so-called dangerous diseases has increased from 1,065,012 in 1970 to 1,281,952 in 1978, or a 20% difference of disease control over an eight-year period. The ability of modern medicine to improve personal happiness and well-being

³ United States Public Health Service, Washington D.C., Annual Reports.

⁴ United States Center of Disease Control (CDC), Atlanta, Georgia. Abortion Surveillance 1972 and 1980.

is also declining as can be seen by the increasing incidence of suicide, 23,480 in 1970 to 27,500 in 1978 (2), and the soaring incidence of divorce, 708,000 in 1970 to 1,128,000 in 1978.(2) It is obvious, with these poor performance figures, that modern medicine does not fulfill the first criterion of excellence.

The second criterion of Islamic Medicine is that it is involved with faith and Divine ethics. All evidence indicates that modern medicine has no faith in God as the Supreme authority and that modern medical ethics are by no means Divine. Modern medicine approves of the termination of the life of an innocent human being just for the convenience of another human being; it approves of premarital or extra-marital relations; it approves of homosexual relations; and it sees no harm in providing alcohol in the great majority of liquid medicinal preparations. All these are clear violations of God's teachings, and these are just a few of many examples. The supreme authority in modern medicine is the consensus of the majority of physicians, opposing God's opinion on a given subject.

The third criterion of Islamic Medicine is that it is guided and oriented. Examination of current medical practices proves that modern medicine is quite misguided and disoriented. The philosophical foundation of modern medicine is confused and lacks sound logic. Modern medicine is trying to save all the lives it can save, but is willing to destroy the lives of millions and millions of unborn babies. Modern medicine recognizes electrical brain activity as a sign of life and would not dispose of any person as long as this activity is present. However, it is willing to dispose of huge numbers of unborn babies even though they have electrical brain activity.

Modern medicine proves beyond any doubt that alcohol is hazardous to health, but is willing to add alcohol to most of the liquid medicinal preparations although a substitute is within reach. Modern medicine is very quick to accept the request of young females for permanent sterilization, then it goes to painstaking lengths to restore fertility in the very same young females who later discover that their initial decision was wrong and that they do not want to be sterile. Modern medicine claims to be doing its best to prevent the development or the spread of disease, but it does not at all discourage and may actually, directly or indirectly, encourage certain socio-sexual behavior and attitudes which have proven to lead to the development and spread of disease. Modern medicine claims to be the most ethical profession, but it shows no hesitation in violating and ignoring the Divine ethical rules.

The fourth criterion of Islamic Medicine is that it is comprehensive, paying attention to body and spirit, the individual and society. Examination of our modern medicine will show that its approaches are usually one-sided and inadequate, leading in many instances to disastrous consequences. Modern medicine has been greatly concerned with the physical growth of

young children while it ignores the needs of their ethical upbringing and spiritual growth. This deficient approach has resulted in a large number of these children growing to be victims of drug abuse and juvenile delinquency, a frightening problem of epidemic proportions. Modern medicine has promoted sex education but has ignored the proper ethical and moral restrictions which should be included in such programs. This has resulted in an increase in the number of unwanted pregnancies, an increase in the number of illegitimate children, and a soaring rise in the incidence of venereal disease, as well as marital problems and unhappy families — results which are exactly the opposite of what was intended from the sex education programs. Modern medicine has fairly advanced knowledge of the physical components of peptic and cardiovascular disorders and also of ways and means of dealing with these components. The incidence of these disorders, however, is still quite high due to the lack of consideration and attention given to the spiritual and social needs of the patient and which may be playing an important role in the etiology of the disease.

The same one-sided approach is manifest at the level of basic science and clinical research. Considerable time, energy, and money are spent on the physical aspects of disease while very little, if any, attention is paid to the spiritual and ethical aspects, be they the cause or the results of the somatic diseases.

The fifth criterion of Islamic Medicine is that it is universal, utilizing all useful resources and offering its services to all mankind. Such a medicine must be willing to look into any potentially useful treatment modality, subject it to proper investigation, and utilize it if it proves to be useful. Modern medicine, however, seems to be quite reluctant to become involved with any treatment modality which does not originate from its own schools. Although some of these "non-conventional" treatment modalities may be effective and may have already passed the test of centuries and proved to be successful, modern medicine would look on them with suspicion or even with prejudiced condemnation rather than approach them with inquisitiveness and an open-minded investigative spirit. As a result of this restrictive attitude, modern medicine is missing a great deal of good ideas which could provide simple, safe, and inexpensive treatment for many disorders.

The sixth criterion of Islamic medicine is that it is scientific. The last thing one would expect is to declare modern medicine non-scientific. Unfortunately, it is. There are certain requirements which have to be met for it to be scientific. These requirements, just to mention a few, include honesty in handling available data, accuracy of figures and statistics, thoroughness in considering all variables, consistency, and some clarity of purpose. Critical examination of modern medicine shows that it fails to fulfill these criteria. There is no clarity of purpose because of the numerous conflicting and contradictory practices and attitudes. There is no consistency of

philosophy and policy as was demonstrated earlier in this discussion. Many variables are often ignored, many statistics lack accuracy, and consequently wrong conclusions are often reached. The fact that modern medicine is afflicted with increasing mortality and increasing incidence of disease in spite of all the technological advances, is not reasonable and does not make sense. It indicates that there must be something missing.

The big question is: Can Islamic Medicine overcome all the problems of modern medicine, and can it provide its missing ingredients? The answer is a confident yes. In all the problem areas of modern medicine listed in this paper, the deficiencies are either lack of ethical and moral guidance, lack of a standardized value system, disregard of certain restrictive or instructive rules related to ingested materials, or disregard of certain hygienic and social guidelines governing human relations and social life. These missing items are the very ones abundantly provided by Islamic teachings.

The detailed elaboration on the correlation between various Islamic teachings and the course or development of various diseases is beyond the scope of this paper and will be the subject of separate investigations. The combination of Islamic teachings and the existing technological advances, which are fully supported by the Islamic teachings, produces a unique blend of healing arts which qualifies as Islamic Medicine, a medicine which is most up-to-date and progressive while in full harmony with Divine teachings and guidance. The basic Islamic teaching asserting that there is a cure for every illness (and it is up to us to find it) is an unbeatable stimulus for study and research towards unparalleled progress and achievement. The establishment of such a healing art entails the total re-evaluation and revision of all existing basic and clinical sciences. In addition to providing the new medical foundation, the revised tests and restructured curricula will reflect the link between the Creator and His creation, thus reinforcing the concept of Oneness of God (Tawheed) and automatically improving the faith of the student through his own professional study. These tests and curricula will also reflect the oneness of creation by showing how the various systems of animated and non-animated creatures follow very much the same laws of nature, or better stated, laws of God, thus broadening the horizon of the student which will in turn make him a better scientist and a better person. It will be a monumental task to establish, but a task worth undertaking.

Section A

**HISTORY OF MEDICINE
DURING
THE GLORIOUS
ISLAMIC PERIOD**

CONTRIBUTION OF ISLAM TO MEDICINE¹

Ezzat Abouleish, M.B., CH.B., D.A., D.M., M.D.

Medicine, as it stands today, did not develop overnight. It is the culmination of efforts of millions of people, some we know and other we do not. The flame of civilization, including medicine, started thousands of years ago, was passed on from one generation to another, and from one country to the other. Depending on who took the sacred responsibility of hosting it, sometime it glowed brighter and sometimes dimmer: it never died away, because if it did, it would have been impossible to re-kindle it.

Between the ancient civilization, namely the Egyptians, Greek, Roman, Persian, Indian, and Chinese, and the Renaissance era in Europe, there was a gap, commonly called "the dark ages", during which the flame was hosted, not by the West, but by another group of people called the Arabs or the Moslems. The term "the dark ages" reflects the civilization in Europe between the 7th and 13th centuries, but by no means does it express the state of affairs in the Arab world or the Islamic Empire at that time when the position of art and science were as bright as the midday sun. That era, unjustifiably, has been commonly neglected and passed over, as if it never existed. This paper is an effort to focus on some of the important events which took place during this period, including the accomplishments of the prominent physicians who lived at that time.

The Spread of Islam

In order to understand how medicine developed in the middle ages, we have to look back at history and find out the important things that happened during the seventh century.

In 570 A.D., a man was born in a small city called Makkah in the

¹This paper was presented at the Annual Meeting of the National Association of the Arab-Americans held in Pittsburgh, May 4-7, 1978.

Arabian Peninsula (Haykal 1976); his name was Mohammed. In 610 A.D. he started preaching a new religion, Islam. In 632 A.D., he died after uniting the Arab tribes who had been torn by incessant feuds, cycles of revenge, rivalries, and internecine fights. He transformed these mostly illiterate nomadic people into a strong nation that encountered and conquered, simultaneously, the two known powers of the time, namely, the Persian and Byzantine Empires. Within a comparatively short space of time, the Islamic Empire extended from the Atlantic Ocean on the west, to the borders of China on the east. In 711 A.D., only 80 years after the death of the prophet, the Arabs had crossed over to Europe where they ruled Spain for more than 700 years. In 732 A.D., they threatened Paris before their thrust was stopped at Tours and Poitiers (Eigeland 1976). In 831 A.D., the Muslims of North Africa invaded Sicily and ruled there for 200 years. By 846 A.D., they controlled the southern part of Italy and encountered Rome (Hitti 1977). The hold of the Moslems over Italy remained so firm that Pope John VIII (872-882 A.D.) deemed it prudent to pay tribute for two years (Hitti 1977). In 869 A.D., the Arabs captured Malta (ibn-Khaldun). In the tenth century, from Italy and Spain, the Arabs extended their raids through the Alpine passages into mid-Europe. In the Alps, ruins of a number of castles and walls which tourists' guides trace back to the invasion of the Moslems from Sicily still exist. In the southern part of Italy and in Sicily, a great civilization prospered and through it, the torch of knowledge passed on to Europe, mainly through the University of Salerno in the southern part of Italy (Hitti 1977, Parente 1967).

The expansion of the Muslims in Europe was not limited to those from North Africa and Spain. The Moslems, under the Ottoman Empire, invaded Europe from the East. They occupied a large part of Middle Europe and besieged Vienna twice: during the reign of Sulayman I (1520-1566 A.D.), and during the reign of Mohammed IV (1648-1687 A.D.) (Hitti 1977).

Islam and the Promotion of Culture and Science

As the Muslims challenged the civilized world at that time, they preserved the cultures of the conquered countries. On the other hand, when the Islamic Empire became weak, most of the Islamic contributions in art and science were destroyed. The barbarous hordes of Mongols burnt down Baghdad (1258 A.D.), and later the Spaniards, in their hatred, destroyed most of the Arabic heritage in Spain. What distinguished the Arabs from their enemies was their belief in Islam which:

1. Stressed the importance and respect for learning. In fact, the very first word revealed to the Prophet of Islam was "Read". The Prophet freed an enemy captured in battle if he paid a ransom or taught writing and reading to ten Muslims. In their holy book, the Qur'an, the importance of knowledge has been repeatedly stressed: "Those who know and those who

do not are not equal." The Prophet Mohammed stressed learning by saying, "One hour of teaching is better than a night of praying." One of the early princes, Khalid Ibn Yazid (end of the 7th century), gave up his treasure for the study of medicine and chemistry. He studied medicine under John the Grammarian of Alexandria, and chemistry under Merrinos the Greek (Haddad 1942). He also encouraged several Greek and Coptic medical books to be translated into Arabic.

2. Forbade destruction. On conquering Mecca, the Prophet Mohammed strongly forbade destruction of homes, animals, or trees. His followers faithfully followed these principles when they conquered other countries.

3. Encouraged cleanliness and personal hygiene. Islam instructed them to approach God in their prayers five times a day with bodies and clothes spotlessly clean.

4. Developed in them respect of authority and discipline. For example, realizing the scourges of plague, their Prophet Mohammed (p.b.u.h.) decreed that "no man may enter or leave a town in which a plague has broken out." And to make it all the more binding and effective, he promised heaven for those who die of plague, saying that such a death was that of a martyr (Haddad 1942). Thus Mohammed (p.b.u.h.) laid for the Muslims the laws governing cordon and quarantine for the first time in history and made them work.

5. Tolerated other religions. Islam recognizes Christianity and Judaism and considers their followers to be people with holy books like Muslims. In fact, they generously sheltered the Jews at an era when the latter were persecuted in Europe. Dr. Jacob Minkin, a reputable rabbi and scholar says "It was Mohammadan Spain, the only land of freedom the Jews knew in nearly a thousand years of their dispersion...while during the Crusades, the armored knights of the cross spread death and devastation in the Jewish communities of the countries through which they passed, Jews were safe under the sign of the Crescent. They were not only safe in life and possessions, but were given the opportunity to live their own lives and develop a culture so unique and striking that it went down in history as the 'Golden Age'. The Moors, the Muslim conquerors of Spain in 711, were not religious fanatics. They were strong in their faith but generous with regard to the religious convictions of others ... The Renaissance of Art in Italy, says George A. Dorsey, has blinded us to the Renaissance of Science in Spain, which fostered science, promoted culture, encouraged learning, and set a premium on intellectual pursuits, no matter whether the intellect was Moslem, Christian or Jew. Not since the days of Greece had the world known such thirst for knowledge, such passion for learning, such spirit shared by the prince and the courtier alike" (Minkin 1968).

The Arabs were assimilated by the vast new countries they reached. From this marriage of genuine character and righteousness with the ancient

and well established civilizations, a great new nation was born. It is difficult to identify this new breed as Arabs, because although the language was Arabic, all the scientists were not necessarily from the Arabian Peninsula. It is also equally difficult to describe it as Islamic, because although the majority of the scientists were Moslems, sponsored by Moslem rulers, and governed by Islamic law, yet some scientists were Christians or Jews, especially during the early phase of the Islamic civilization: the period when works in foreign languages were translated into Arabic, and the period of its decline, when the Arabic books were translated into Latin and Hebrew. Therefore, in this article, the adjectives Arabic and Islamic will be used as synonyms.

Medicine Before Islam

In order to comprehend the contributions of the Arabs to medicine, we must have in our minds a picture of the condition of medicine before they arrived on the scene. Generally speaking, two elements are required for medical practice: manpower and hospitals.

A. Manpower before Islam:

There were medical centers in different parts of the world which were later either under the control of the Arabs or influenced by them. For example, in Syria, medicine was advanced and was greatly influenced by the Byzantine civilization which affected also the economic and administrative systems (Hammarneh 1962). From the fifth century on, Greek was the language of learning in Syria. The knowledge of the Arabs of the Greek civilization was mainly through the Syrian scholars who translated it into Arabic. In Egypt, Alexandria was another center for culture. The Arabs came into contact with both the ancient Egyptian and Greek civilizations through the Egyptian scholars. In Persia, there was a medical school in a city called Jundi-Shapur in which medicine was highly developed (Fig. 1). The Abbasi Caliphs during the 8th century encouraged the Persian physicians to translate medical literature from the Persian language into Arabic, to build medical centers in Baghdad, the capital of their empire, and to run newly built hospitals. With further expansion east, the Arabs through contacts with India and China, obtained ideas and methods, not only in medicine, but also in mathematics, chemistry, philosophy, etc.

B. Hospitals before Islam:

Hospitals, as we now know them, were probably not present. True, there were places for the sick to stay, but these were mainly temples or buildings adjoining temples that were run by priests. Gods were supposed to play a major role in the art of healing. For example, the Goddess Taueris was the Egyptian symbol of fecundity who was the protectress of

the pregnant and parturient. She was shown as a standing pregnant hippopotamus carrying the hieroglyph meaning protection in one paw and the sign of life in the other. Small figures of Taueris were popular as amulets (Speert 1973). In those days, sanctuary, prayers, incantation, and hypnosis were integral parts of the therapy.

Characteristic Feature of Hospitals in the Islamic Civilization

During the Islamic civilization, hospitals had developed and attained specific characteristics:

1. Secular: Hospitals served all peoples irrespective of color, religion, or background. They were run by the government rather than by the church, and their directors were commonly physicians assisted by persons who had no special religious color. In hospitals, physicians of all faiths worked together with one aim in common: the well-being of patients.

2. Separate wards: Patients of different sexes occupied separate wards. Also different diseases especially infectious ones, were allocated different wards.

3. Separate nurses: Male nurses were to take care of male patients, and vice-versa.

4. Baths and water supplies: Praying five times a day is an important pillar of Islam. Sick or healthy, it is an Islamic obligation. In either case one must offer prayer, but if one is sick one may pray lying in bed. Before praying, one must, however, wash the face, the head, the hands, and the feet, if possible. For certain conditions, a full bath is obligatory. Therefore, these hospitals had to provide the patients and employees with plenty of water and adequate bathing facilities.

5. Practicing physicians: Only qualified physicians were allowed by law to practice medicine. In 931 A.D., the Abbasid Caliph Al-Muqtadir, ordered his Chief Court-Physician Sinan Ibn-Thabit to screen the 860 physicians of Baghdad and to grant licenses to practice only to the ones who were qualified (Hamarnah 1962). The counterpart of Ibn-Thabit, Abu-Osman Sai'd Ibn-Yaqub, was ordered to do the same in Damascus, Mecca, and Medina. The latter two cities were in need of such a screening because of the hundreds of thousands of pilgrims visiting them every year.

6. Medical schools: The hospital was not only a place for treating patients, but it also served as a school to educate and train medical students, imparting medical knowledge, and developing medicine as a whole. To the main hospitals, there were attached expensive libraries containing the most up-to-date books, auditoria for meetings and lectures, and housing for students and staff of the hospital.

7. Proper records of patients: These hospitals were the first in history that kept regular records of patients and their medical treatment.

8. Pharmacy: During the Islamic era, the science and the profession of

pharmacy had developed to an outstanding degree. The Arabic materia medica became rich and many new drugs and compounds were added to it as the Muslims had access to all parts of the known world, either through control or trade. Their ships sailed to China and the Philippines, and their convoys exchanged trade with Africa, Europe and Asia. Chemistry became an advanced science, and a new specialization called pharmacy developed.

The hospitals built in medieval Europe were modeled after these Arabian hospitals. They also served as centers for medical education and students from all parts of the south and the west thronged to them in search for knowledge.

The Reasons for the High Standard of Islamic Hospitals

In the Islamic Empire, the hospitals reached their golden era unsurpassed in previous history. The reasons for this unprecedented progress may briefly be summed up as follows:

1. *Being part of an ascendent civilization:* The people were prosperous, and they were capable of taking care of their health seeking the best available treatment. Islam stresses the necessity of seeking treatment of every disease. The Prophet says "For every disease God has created a cure." The sciences related to a good medical care system were fairly advanced, e.g., the Arabs were very advanced in chemistry, mathematics, administration, pharmacy, medicine, etc. They gave the world a counting system which replaced the cumbersome Roman numerals. The world also owes to them the knowledge of many important chemical processes and reactions, namely, sublimation, precipitation, filtration, distillation, etc. The great Arab chemist Jabir Ibn-Hayan discovered sulphuric and nitric acids. According to Webster's Dictionary, words such as sugar, alcohol, alkali, syrup, coffee, cotton, are all Arabic in origin. Fielding H. Garrison, the author of the well-known work on the "History of Medicine" said: "...The Saracens themselves were the originators not only of algebra, chemistry, and geology, but of many of the so-called improvements or refinements of civilization, such as street lamps, window-panes, firework, stringed instruments, cultivated fruits, perfumes, spices, etc. ..."

2. *High prestige of physicians:* The physicians in this era enjoyed high prestige. Although anyone, irrespective of his social status, could study medicine, the route was long and tedious. Before embarking upon his medical studies a student first had to study Islamics, philosophy, astronomy, art, chemistry. Only then was he admitted into a medical school. A physician was thus a highly cultured person who had wisdom and knowledge. In fact, the Arabic term for a physician is *hakim* or a sage. In the 9th and 10th centuries, the Court Physician was placed above the Chief Justice. Many eminent physicians, as we will see later, had enough talent, social knowledge,

political ability and wisdom to be appointed by the caliphs as their prime ministers (*viziers*). With their high position and social connections physicians could easily obtain generous funds for their hospitals.

3. *Rulers' involvement in public services*: The caliphs of the Islamic empire built magnificent hospitals for one or more of the following reasons:

- a. *Religion*: Their religion stated that money spent on charity is a good investment for life in the Hereafter.
- b. *Eternity*: The Pharaohs of Ancient Egypt sought eternity by building pyramids, the rulers of Islam sought the same by building mosques, hospitals, and schools carrying their names.
- c. *Politics*: To show their people that they cared, and were interested in them, the rulers built hospitals. Whatever the motive of the ruler, the population benefitted and good hospitals were erected.

4. *Adequate financing to run the hospitals*: The rulers set aside generous funds for running these hospitals. Also there were many philanthropists, who like their rulers, followed their religious beliefs and spent generously on charitable causes like building hospitals, etc. In Islam, there is a special system called *Al-Waqf* or endowments. One may donate part or all of his wealth to an endowment for any charitable cause. Usually the government takes care of such endowments, and the resultant revenues are used in maintaining and building mosques, hospitals, and schools. Another important source of funds and an important pillar of Islam is what is known as *zakah* or poor-due which is collected annually from prosperous people at a rate of two and a half percent of their surplus wealth. All funds thus collected go to the state treasury which uses them for well-defined charitable purposes. Very few hospitals in the Islamic era were private. In other words, income from patients' fees constituted a relatively unimportant source of funding.

Specific Hospitals

The capital of the Islamic empire kept changing with the change of rulers and dynasties. One result of this was that in all these capital cities important medical centers developed. By the end of the 13th century, there were many such medical centers throughout the Arab world. Because of the limitation of space and scope of this paper, we will confine ourselves to some of the important hospitals established in various regions.

1. In *El-Sham*

El-Sham included what is known now as Syria, Lebanon, Jordan and

Palestine, Damascus and Jerusalem were its important cities.

- a. *In Damascus:* The first known hospital in Islam was built in Damascus in 706 A.D. by the Umayyad caliph, Al-Walid (Hamarnah 1962). The most important hospital built in Damascus in the Middle Ages was named *Al-Nuri Hospital*, after King Nur Al-Din Zinki, in 1156. This hospital was built during the Crusades to fulfill a need for a well-equipped and well-staffed hospital. It turned out to be not only a first class hospital, but also a first class medical school. The king donated to the hospital a whole library rich in medical books. Books were expensive and limited in number in the Middle Ages because they were hand-written as printing was not used until the middle of the fifteenth century. The hospital adopted medical records, probably for the first time in history. Many eminent physicians graduated from its medical school. An example is Ibn Al-Nafis, the eminent scholar who discovered the pulmonary circulation. This hospital served the people for seven centuries and parts of it are still extant.
- b. *In Jerusalem:* In 1055 A.D., the Crusaders built Saint John Hospital. By the end of the eleventh century, it had grown quite large and included a hospital, a palace for knights, and a convent for the nursing sisters. It was an extremely busy hospital considering the large number of daily admissions of patients, pilgrims, and wounded soldiers. After the liberation of Jerusalem by Salah Al-Din in 1187 A.D., the hospital was renamed as *Al-Salahani Hospital*. Salah Al-Din expanded the hospital and it continued to serve the people until its destruction by an earthquake in 1458 A.D.

2. *In Iraq and Persia:*

In 750 A.D., Baghdad was built as the capital of the new Abbasid dynasty by the Caliph Abu-Gaifar Al-Manşur. In 766 A.D., he appointed the dean of the medical school of Jindi Shapur, Jurjis Ibn-Bakhtishu', as his Court Physician and instructed him to build more hospitals reflecting the true glory and prosperity of Baghdad. Later the caliph Harun Al-Rashid (786-809 A.D.) ordered his Court Physician, Jibril, the grandson of Ibn-Bakhtishu, to build a special hospital called Baghdad Hospital. This hospital developed into an important medical center. One of its chiefs was Al-Razi, the eminent internist.

In 918 A.D., the Caliph Al-Muqtadir built two hospitals in Baghdad. One was on the east side of the city which he named Al-Sayyidah Hospital, after his mother, and the other was on the west side which he named after himself, Al-Muqtadiri Hospital. Another important hospital was Al-Adudi Hospital. It was built in 981 A.D. and was named after King Adud Al-Dawlah. It was the most magnificent hospital built in Baghdad before mod-

ern times. The caliph wanted to outdo his predecessors. The hospital was furnished with the best equipment and supplies available at the time. It had interns, residents, and twenty four consultants to care and look after the patients. Haly Abbas, the author of the famous book "Liber Regius (Al-Malaki)", was one of its staff physicians. It was destroyed in 1258 when Holagu, the grandson of Chengiz Khan, invaded Baghdad.

3. In Egypt:

In 872 A.D., Ahmed Ibn-Tulun built a hospital called *Al-Fustat Hospital* in the City of Al-Fustat, now a part of old Cairo. It served the growing Cairo population for six centuries. It was divided into separate wards. On admission, the patients were given special apparel while their clothes, money, and valuables were stored away and returned to them at the time of their discharge.

In 1284 A.D., King Al-Mansur Qalawun built an important hospital, named *Al-Mansuri Hospital*. The story behind its construction is interesting. King Al-Mansur Qalawun was an officer in the Muslim army fighting the Crusaders. While in the Holy Land, he fell sick and was admitted to Al-Nuri Hospital. On recovery, he vowed that if he ever became the ruler of Egypt, he would build a hospital in Cairo even larger and more magnificent than Al-Nuri Hospital for the sick, poor, and rich alike.

It was the best hospital built then as reported by the contemporary historians such as Ibn-Battuta and El-Kalkashandi. It had different departments for different diseases. Music therapy was used as a line of treatment for psychiatric patients. It served four thousand patients daily. Not only was the patient's stay in the hospital free, but on his discharge, the patient was given food and money in compensation for being out of work during his stay in hospital. Al-Mansuri Hospital has continued to serve Cairo for the past seven centuries. Today it is used for ophthalmology and is called Mustashfa Qalawun. Its ancient door is preserved in the Islamic Museum of Cairo.

4. In North Africa (Al-Maghrib Al-Arabi):

a. *Tunisia*: In 830 A.D., Prince Ziyadat Allah I, built *Al-Qayrawan Hospital* in a district of the Qayrawan city called Al-Dimnah. Subsequently all hospitals in Tunisia were called Dimnah instead of Bimaristan as they were called in the East, which is a Persian word meaning a hospital. The Qayrawan Hospital was characterized by spacious separate wards, waiting rooms for visitors and patients, and female nurses from Sudan, an event representing the first use of nursing in Arabic history. The hospital also included a mosque for prayers.

b. *Morocco*: In 1190 A.D., the King Al-Mansur Ya'qub Ibn-Yusuf,

built a hospital in the capital city, Marakesh, and named it *Marakesh Hospital*. It was a huge hospital beautifully landscaped with fruit trees and flowers. Water was carried by aqueducts to all sections. Patients were provided with special apparel: one for winter and another for summer. The pharmacy was taken care of by specialists called the *Sayadlah*. There was an expensive private section where a patient was charged what is equivalent to \$150/day. One thousand years ago, this fee was quite expensive.

5. *Al-Andalus (Spain):*

In 1366 A.D., Prince Muhammed Ibn-Yusuf Ibn Nasr built the *Granada Hospital* in the city of Granada which had a population of half a million. The hospital represented the beauty of the Arabic architecture in Spain and served the people until the fall of Granada in 1492 A.D.

Method of Therapy in Islamic Medicine

The patients were treated according to a well-defined treatment plan. It began with physiotherapy and diet; if this failed, drugs were used. Only as a last resort was surgery used. The physiotherapy included exercises and water baths. The Arabs had an elaborate system of dieting and were aware of food deficiencies. Proper nutrition was an important part of treatment plan.

Drugs were divided into two groups: simple and compound drugs. The Arabs were aware of the interaction between drugs. They used simple drugs first. If these failed, compound drugs made from two or more compounds were used. When all these conservative measures failed, surgery was performed.

Medical Ethics in Islam

The medical profession was a well respected area, and by laying down its own code of ethics it maintained its position of importance. Al-Tabari, the chief physician in 970 A.D., described the Islamic code of medical ethics as follows (Hamarnah 1971, Levy 1967):

1. *Personal characters of the physician:*

The physician ought to be modest, virtuous, merciful, and unaddicted to liquor. He should wear clean clothes, be dignified, and have well-groomed hair and beard. He should not join the ungodly and scoffers of truth, nor sit at their table. He should select his company from among persons of good reputation. He should be careful of what he says and should not hesitate to ask forgiveness if he makes an error. He should be forgiving and never seek revenge. He should be friendly person and a peacemaker.

He should not make jokes or laugh at the improper time or place.

II. His obligation towards patients:

He should avoid predicting whether a patient will live or die, only God (Allah) knows that. He ought not lose his temper when his patient keeps asking questions, but should answer them gently and compassionately. He should treat the rich and the poor, the master and the servant, the powerful and the powerless, the elite and the illiterate alike. God will reward him if he helps the needy. The physician should not be late for his rounds or his house calls. He should be punctual and reliable. He should not wrangle about his fees. If the patient is very ill or has an emergency, he should be thankful for what he is paid. He should not give drugs to a pregnant woman to induce an abortion unless it is necessary for the mother's health. If the physician prescribes a drug orally, he should make sure that the patient knows the name of the drug in case he asks for the wrong drug and get sicker. He should be decent towards women. He should not divulge the secrets of his patients.

III. His obligation towards the community:

The physician should speak no evil of reputable men of the community or be critical of any one's religious beliefs.

IV. His obligations towards his colleagues:

The physician should speak well of his acquaintances and colleagues. He should not honor himself by shaming others. If another physician has been called to treat his patient, he (family doctor) should not criticize his colleague even if the diagnosis and the recommendations of the latter differ from his own. However, he has the obligation of explaining the consequences of each method of treatment, since it is his duty to counsel the patient as best he can. He must warn him that combining different types of therapy may be dangerous because the actions of different drugs may be incompatible and injurious.

V. His obligations towards his assistants:

If his subordinate makes a mistake, the physician should not rebuke him in front of others, but correct him privately and cordially.

ISLAMIC PHYSICIANS

Medicine in Islam passed through three stages:

I. The first stage is the stage of translation of foreign sources into Arabic. It extends mainly over the seventh and eighth centuries.

- II. The second stage is the stage of excellence and genuine contribution. This is the time when the Muslim physicians were the leaders and made original contributions to the advancement of medicine. This stage is spread over the ninth through to the thirteenth century.
- III. The third stage is the stage of decline where medicine, as well as other branches of science, became stagnant and a process of deterioration set in. This stage begins mainly after the thirteenth century.

During the first stage, Syrian and Persian scholars did a marvelous job of translating honestly the ancient Greek and Syriac literature into Arabic. They translated works on science, philosophy, astrology, and medicine. The works of Hippocrates (460-370 B.C.), Aristotle (384-322 B.C.), and Galen (131-210 A.D.) were among those translated. From Arabic, the classic Greek literature was translated into Latin, then into Greek because most of the original scripts were lost and the only source was the Arabic translation. If the Arabs did only one thing, namely, preserve the ancient literature and hand it to Europe, that would have been a sufficient contribution in itself. The Muslim rulers encouraged translation, e.g., Caliph AlMaamun Al-Abbassi paid a translator the weight of his translation in gold (Haddad 1942). Among the eminent physicians of this first stage were Jurjis Ibn-Bakhtishu, his grandson Jibril, Yuhanna Ibn-Masawayya, and Hunain Ibn-Ishak; most of them were Christians, yet they were respected and well treated by the Muslim rulers.

It is said, rightly or wrongly, that the history of a nation is the sum total of the history of a few of its individuals. This is particularly true about the history of medicine during the Arab period. In every stage of its development we find men of outstanding repute, the sum total of whose efforts has constituted this magnificent chapter. It is impossible to give an account of all the important physicians of this era. We will restrict ourselves to some of the most outstanding physicians who were known to Medieval Europe and whose books affected its thinking and practice for centuries (Table 1). I have chosen an internist, Al-Razi (Razes); a surgeon, Al-Zahrawi (Abulcasis); a physician-philosopher of Islam, Ibn-Sina (Avicenna); the philosopher-physician of Islam, Ibn-Rushd (Averroes); a pioneer in physiology, Ibn-Al-Nafis; and a Jewish Arab, Ibn-Maimon (Maimonides).

TABLE.1. THE MAIN ISLAMIC PHYSICIANS

NAME IN ARABIC	NAME IN LATIN	SPAN OF LIFE (A.D.)	SPECIALTY AND CONTRIBUTION	SPECIAL BOOKS	CITY- COUNTRY
Jurjis ibn Bakhtishu Jibril Yuhanna ibn Masawayh	Jurjis ibn Bakhtishu Jibril Yuhanna ibn Masawayh	700-800	Translation from Greek and Syriac into Arabic	Translation of Works of Hippocrates, Galen and Aristotle	Baghdad
Al-Razi	Razes	841-926 (Ray-Tehran)	<ul style="list-style-type: none"> • Internal Medicine • Epidemiology • Ophthalmology • Chemistry • Physics • Philosophy 	Kitab Al-Mansuri (The Liber Al-Mansuris) Al-Marshid Al-Hawi (Continens) Al-Gudari wa Al-Gudari (de Peste or de Pestilentia)	Kharasan Baghdad
Ibn_Sina	Avicenna	980-1037 (Bukhara)	<ul style="list-style-type: none"> • Medical Encyclopedia • Philosophy • Astronomy • Poetry 	100 books Al-Qanun (over million words)	Hamazan Jurjan
Ibn-Rushd	Averroes	1126-1198	<ul style="list-style-type: none"> • Philosophy • Medicine • Law 	Kitab al-Kulliyat	Al-Andalus Granada
Ibn-Maimon	Maimonides	1135-1208 (Granada)	<ul style="list-style-type: none"> • Philosophy • Translations—Hebrew, Latin • Poisons • Hygiene and Public Health 	<ul style="list-style-type: none"> • Al-Tadbir El-Sihhi • Mourshid El-Hairan 	Cairo (Saladdin's physician)
Ibn-Al-Nafis		1208-1288 (Damascus)	<ul style="list-style-type: none"> • Pulmonarycirc • Blood supply to the heart 	<ul style="list-style-type: none"> • Sharh Tasfirih al-Qanun • Al-Mujaz 	Damascus Cairo

AL-RAZI
(RAZES)
841-926 A.D.

His full name is Abu-Bakr Mohammed Ibn-Zakaria Al-Razi, known to the Western World as Razes. He was born in Ray, a suburb of Tehran, the capital of modern Persia (Profile of Iran 1977, Sarton 1950). He first studied music which was his main interest in his early life, and was a skillful flutist. He then studied philosophy, and later medicine. But he was a better physician than a philosopher (Figure 2).

He first became the Court Physician of Prince Abu-Saleh Al-Mansur, the ruler of Khorosan. Then he moved to Baghdad where he became the Chief Physician of the Baghdad Hospital and the Court Physician of the caliph. He had a good basis of physics and chemistry as well as medicine.

He published several books which were translated into Latin, French, Italian, Hebrew, and Greek. One of his main books is "Al-Mansuri" (Liber Al-Mansoris) which he dedicated to his patron Prince Al-Mansur. It was composed of ten treatises and included all aspects of health and disease. He defined medicine as "the art concerned in preserving healthy bodies, in combating disease, and in restoring health to the sick." He thus outlined the three aspects of medicine, namely public health, preventive medicine, and treatment of specific diseases. He listed seven principles for the preservation of health:

1. Moderation and balance in motion and rest.
2. Moderation in eating and drinking.
3. Elimination of superfluous matter.
4. Improvement and regulation of dwelling places.
5. Avoidance of excesses before they become uncontrollable.
6. Maintenance of harmony in ambitions and resolutions.
7. Acquisition of reticence through possession of good habits including exercise.

He also published another book called *Al-Murshid*. In it, he empha-

sized the important lines of therapy that we mentioned earlier. He described the different types of fever including continuous, relapsing, and hectic. He stated that fever can be a symptom of a disease or a disease in itself. He introduced mercury as a therapeutic drug for the first time in history, which was later adopted in Europe. He realized that normally no man wants to get sick, and if he is, he wants to recover as soon as possible. However, if a patient lacks the will or the desire to get well, there is very little a physician can do to help him. He stressed the continued medical education of the physician. He advised him to record his own observations. He encouraged him to meet with other physicians to discuss medical problems. He recommended that physicians try solving these problems rather than depend on others for finding solutions.

Another book written by Al-Razi was named "Al-Hawi", which means the complete text. It was composed of 22 volumes, and it, especially its 9th volume on pharmacology, was used as one of the main text books in the medical school of Paris.

He also wrote a treatise on measles and smallpox and called it "de Peste or de Pestilentia." It was translated into Latin in 1565 A.D. It is a masterpiece in clinical medicine (Browne 1962). It describes the clinical difference between the two diseases so vividly that nothing since has been added (Keys 1971).

AL-ZAHRAWI

(ABULCASIS, BUCASIS, ALZAHRAVIUS)

931-1013 A.D.

His full name is Abu-Al-Qasim Khalaf Ibn 'Abbas Al-Zahrawi. He is known in the Western World as Abulcasis, Bucasis or Alzahravius. He is the famous surgeon of the Arabs. In 930 A.D., he was born in Al-Zahra, a suburb of Cordova. He attended the University of Cordova which had been established for one and a half centuries. At that time Cordova had a population of one million (Hitti 1977). It was the magnificent capital of Al-Andalus where culture and science were at their peak in Europe. In military power the Muslims also reached their zenith, not only in Spain but also throughout Europe after King Abdel-Rahman III defeated the Spanish kings of Navarre, Castile, and Leon in the north in 997 A.D.

Al-Zahrawi became an eminent surgeon. He was appointed as the Court Physician of King Abdel-Rahman III. He spent a productive life in practicing medicine, especially in surgery and medical writings. He died at the age of 83.

He authored four main works. One of these is "Al-Tasrif Liman Ajiz 'an Al-Ta'lif" which was the best medieval surgical encyclopedia and was used in Europe until the 17th century. Stressing the importance of basic sciences he says: "... Before practicing, one should be familiar with the science of anatomy and the functions of organs so that he will understand them, recognize their shape, understand their connections, and know their limitations. Also one should know the bones, nerves, and muscles, their numbers, their origin and insertions, the arteries and the veins, their start and end. These anatomical and physiological bases are important, and as said by Hippocrates 'There are many physicians by title and a few by practice...'. A physician who does not understand the anatomy and physiology may commit a mistake resulting in the death of a patient. I have seen someone, who pretended to be a surgeon, incised an aneurysm in the neck of a woman, mistaking it for an abscess. The woman bled to death."

Heller stated that Al-Zahrawi described the ligature of arteries long before Ambrose Pare (Khairallah 1942). Al-Zahrawi also used cautery to control bleeding. He used wax and alcohol to stop bleeding from the skull during cranial surgery. Sprengel said that Al-Zahrawi was the first to teach the lithotomy position for vaginal operations (Khairallah 1942). Al-Zahrawi also described the tracheotomy operation and performed it in an emergency on one of his servants. He was the first to write on orthodontia. He showed evidence of great experience from details of clinical picture and surgical procedures e.g. his description of varicose veins stripping, even after ten centuries, is almost like modern surgery (Al-Okbi 1971): "... Have the leg shaved if it is very hairy. The patient gets a bath and his leg is kept in hot water until it becomes red and the veins dilate; or he exercises vigorously. Incise the skin opposite the varicose vein longitudinally either at the ankle or at the knee. Keep the skin opened by hooks. Expose, dissect, and separate the vein, introduce a spatula underneath it. When the vein is elevated above the skin level, hang it with a blunt rounded hook. Repeat the procedure about three fingers from the previous site and hang the vein with another hook as previously done. Repeat the procedure at as many sites along the varicose vein as necessary. At the ankle, ligate and strip it by pulling it from the incision just above. When it reaches there, repeat at the higher incision until all of it is stripped. Ligate the vein and then excise it. If difficulty is encountered in pulling it, ligate its terminal part with a string and pass it under the spatula and dissect it further. Pull gently and avoid its tearing, because if it does, it becomes difficult to strip all of it and can cause harm to the patient. When you have stripped it all, put alcohol sponges at the sites of the skin incisions and take care of the incisions until they heal. If the varicose vein is tortuous, you have to incise the skin more frequently, at each change of direction.

Dissect it and hang it with the hooks and strip it as previously described. Do not tear the vein or injure it. If this happens, it becomes difficult to strip it. The hooks used should be blunt, eyeless, and rounded, otherwise it can injure the vein."

He also wrote about fracture of the skull (Al-Okbi 1971): "... The types of skull fractures are numerous, their shapes are different, and their causes are many. For example, some skull fractures are due to a blow by a sword that splits the whole skull and reaches the dura, the same as the axe does to the wood, therefore it is called *axial fracture*. Sometimes the sword does not split the skull completely, and it is called incomplete axial fracture. Such a fracture can be small or big. Another type is *comminuted fracture* which can be due to a hit by a stone or a fall on a stone; and this fracture can reach the dura or only be limited to the outer part of the bone. This fracture can also be small or big. A third type is the *hairtype skull fracture* which is very tiny and linear like a hair. A fourth type is the *depressed fracture* which occurs due to a fall or a blow depressing the bone like a brass jar hit by a blunt instrument. This usually happens when the bone is soft as in children. The types of these fractures are diagnosed by examining the wound, removing the debris and contused part of the scalp, exposing the skull, and feeling it by the spatulas. The hairy fracture is difficult to discover and can be diagnosed by exposing the skull, and smearing it with ink; the linear fracture thus appears stained." In the treatment of fractures of the skull, Al-Zahrawi wrote: "... If the patient shows serious signs such as high fever, repeated vomiting, exophthalmos, convulsions, and coma, do not touch him because he is probably going to die. Otherwise, treat him as follows: first shave the patient's head. In comminuted depressed fractures, these pieces of bone should be removed as will be explained. If in the process of the patient's examination or during surgery bleeding occurs, it can be controlled by pressure using towels soaked in alcohol and with wax. Then after control of the bleeding, the small pieces of bone are removed using special forceps (see illustrations). To remove the depressed fracture, first, make trephines in the healthy bone around it. These trephine instruments should not penetrate beyond the skull into the soft tissues underneath, thus they are called non-penetrating trephines. They have a rounded ring in their proximal end to prevent them from penetrating beyond certain depths. You should have a number of these trephines that can stop at different depths depending on the thickness of the skull (see illustration). Connect the holes in the skull using special saws (see illustration). First, use a fine small saw, then larger ones. These should be sharp and made of steel. Avoid cutting the dura by the trephine or saw. Once the depressed bone is freed, remove it gently, then smoothen the edges of the skull by special instruments (see illustration). Wash with alcohol and treat the wound with packs soaked with ointment."

Al-Zahrawi described many dental operations such as dental extractions, fixation, reimplantation, and artificial teeth. He described tooth pain and cautioned the physician against removal of the healthy tooth to which pain is referred. He used gold threads to fix teeth because other metals would tarnish and cause a reaction. Chapter 6 of his book was all devoted to foreign bodies of the ear and their treatment. He also devoted one whole chapter to midwifery, giving tips to midwives, and describing the problems of difficult labor and obstetrical maneuvers. He recommended decompression of the fetal head for obstructed labor and described the instruments used. He described the management of liver abscess by treatment in two stages (Khairallah 1942). In the first stage adhesions around it were formed, and then closed from the peritoneal cavity. The second stage was to incise it. ... "If the procedure is done in one stage, the pus may spread to the whole abdomen and the patient may die." He described a total of 200 surgical and dental instruments most of which were original (Fig. 3). He said "...Choose your instruments carefully beforehand according to the operation. However, you should design other devices if needed." Thus he encouraged the physician to be innovative.

During the time of Al-Zahrawi, surgery in the Islamic world became a respected specialty practiced by reputable physicians. On the contrary in Europe, surgery was belittled and practiced by barbers and butchers. In 1163 A.D., the Council of Tours declared the following resolution "Surgery is to be abandoned by the schools of medicine and by all decent physicians."

IBN-SINA

(AVICENNA)

980-1037 A.D.

Ibn-Sina's full name is Abu-Ali Husayn Ibn-Abdullah Ibn-Sina, and his titles were Al-Shaykh Al-Rais (The Chief Master) or Al-Muallim Al-Thani (The Second Teacher), second to Aristotle (Browne 1962). He is known in the Western World as Avicenna (Figure 4).

In 980 A.D., Avicenna was born in Bukhara which is now part of Russia and known as Uzbek. By 10, he was already proficient in the Qur'an and Arabic classics. By 16, he finished Islamic law studies, geometry, anatomy, logic and philosophy. His metaphysics were influenced by an earlier Muslim philosopher, Al-Farabi. By 18, he completed the study of medicine. Soon after, he became the Prime Minister (the Vizier) and Court Physician of Prince Nuh-Ibn-Mansur, the Sasanid ruler of Bukhara.

The prince was impressed by the intelligence and endurance of his vizier and opened for him the royal library, which was unique in its literary richness. Ibn-Sina wrote his first book at the age of 21. Then he became Vizier of Ali ibn Maimun, the ruler of Khawarazm or Khiva. But he ultimately fled to avoid being kidnapped by Sultan Mohammed El-Ghazni. Ironically, fate played an important role in the life of Avicenna. The ruler of Hamadan, the southern part of Persia, who was called Amir Shamsu'd-Dawla, had renal colic. Ibn-Sina treated the amir's colic. The latter was very pleased and appointed Ibn-Sina, not only his Court Physician, but also his vizier. Avicenna was a proud and arrogant man. This created enemies; military leaders mutinied against him, resulting in his dismissal and imprisonment. Fortunately, the amir got renal colic once more and no one could relieve his pain. He thus summoned Avicenna who cured him. The amir apologized to Avicenna and reinstated him.

Avicenna's life during this time was extraordinarily strenuous. He was busy all day in the service of the amir. The great part of the night was passed in lecturing and writing his books, with intervals of wine drinking, music, and minstrelsy. After many vicissitudes, worn out by hard work and hard living, Avicenna died and was buried in Hamadan, Persia, in 1037 A. D. at a comparatively early age of 57. In his last illness, he treated himself unsuccessfully, so that it was said by his detractors that neither could his physics save his body nor his metaphysics save his soul (Browne 1962).

Avicenna wrote 100 treatises, 21 of them were major, of which 16 were on medicine. He wrote on philosophy, medicine, and named the book *Al-Qanun fi Al-Tibb* (Canon of Medicine). It was an encyclopedia containing more than one million words, composed of 5 volumes:

Volume I described the principles and theories of medicine.

Volume II contained the names of simple drugs arranged alphabetically.

Volume III described localized diseases of the body from the head to the toes.

Volume IV was addressed to general diseases of the body e.g., fevers.

Volume V explained compound drugs.

The Canon contained all medical knowledge up to the 10th century. It was translated into many languages and was a major source book for medical schools in Europe up to the 17th century. Although the Canon was a great book, it overshadowed the important earlier or later works written prior to it by Al-Razi and Al-Zahrawi, and subsequent to it by Ibn-Al-Nafis, Ali Ibn-Abbas, and Halle Abbas (Haddad 1942).

Avicenna wrote Arabic and Persian poems. The last of his Arabic poem, which is considered a classical beauty, describes the descent of the

✓ Soul into the Body from the Higher Sphere which is its home (Browne 1962).

Avicenna is considered a great philosopher, and his writings affected the thinkers and influenced many of those who appeared after him. He was a unique man, not only because of his encyclopedic accomplishments in medicine, but also because of the versatility of his genius. He has been compared in this respect with Aristotle, Leonardo da Vinci, and Goethe (Keys 1971).

IBN-RUSHD

(AVERROES)

1126-1198 A.D.

Ibn-Rushd, or Averroes as known in Europe, was born in Granada in 1126 A.D. He studied philosophy, medicine and law, and was appointed a judge in Seville in 1169 A.D., where he stayed in office for a quarter of a century. He was greatly influenced by Aristotle on whom he wrote important commentaries (Black 1970, Al-A'sar 1972). In some of these interpretations he asserted that the human soul is not independent, but shares a universal mind. This belief caused a great controversy and was later declared heretical by both the Muslims and Christians alike because it contradicted the doctrine of personal immortality.

✓ He was admired by the Jews of Spain who spread his philosophy into Europe especially into Italy and France after they were forced out of Spain. His followers interpreted some of his writings to mean that there are two kinds of truth, a philosophical and a religious truth. This implied a separation of reason and faith and influenced philosophical and theological speculation for many centuries. Because of his bold ideas, he was dismissed from his work and sent to Morocco where he was kept in prison till he died on December 12, 1198. His important contribution to medicine was "Al-Kulliyat fi Al-Tibb" (Colliyet). It was a summary of the medical science of that time and was composed of seven parts. He wrote another book, "Al-Ta'sir" on practical medicine. It consisted of useful excerpts and a clinical description of diseases including serous pericarditis and mediastinal abscess. He personally suffered from the latter disease and left very careful records of his own symptoms. The book is not known in Arabic, but there are several Latin editions (Haddad 1942). Ibn-Rushd was another example of the cultured Muslim physician.

IBN-MAIMON
(MAIMONIDES)
1135-1204 A.D.

In 1135, Musa Ibn-Maimon (Moses Maimonides) was born in Cordova, Spain. (Minkin 1968). His father was a rabbi and had a great influence on Moses in his interests and future achievements. During that period, the Jews had a golden era in Spain. Minkin (1968), a renowned scholar and an eminent rabbi wrote "It was Mohammedan Spain, the only land the Jews knew in nearly a thousand years of their dispersion, which made the genius of Moses Maimonides possible."

In 1160 A.D., Moses emigrated to North Africa to the city of Fas where he studied medicine. In 1165 A.D., he left for Palestine. However, he was dissatisfied with the cultural atmosphere there, so he went to Egypt where he stayed until he died in 1200 A.D. He was buried in Teberias, Palestine.

Maimonides started his career as the Rabbi of the Jewish Community of El-Fostat City, the capital of Egypt at that time and a part of old Cairo now. Later on in life, he practiced medicine, and became an eminent and respected physician. He served both King Salah El-Din (Saladin) and his elder son Sultan Al-Malik Al-Afdel during his short reign (1198-1200 A.D.). He had the confidence of both. During the crusades King Richard, the Lion-Hearted, fell sick, Salah El-Din sent Ibn-Maimon to treat him. When Richard recovered, he asked Ibn-Maimon to join his court, but he politely declined and stayed with Saladin (Minkin 1968).

Ibn-Maimon's impact on the Jewish religion is very very significant. He wrote a classical work in the Jewish religion besides codifying the Jewish laws (Black and Roth 1970). He also wrote on philosophy. His book, "Dalalat Al-Hai'ran" (The Guide of the Perplexed) is an important work which was welcomed not only by those of the Jewish faith, but also by Muslims and Christians alike. The book was in Arabic, and it was only after his death that a Hebrew translation of it was done. He was influenced by his contemporary Ibn-Rushd, and by Aristotle, but he tried to reconcile logic with faith.

In medicine Ibn-Maimon did two important things: First, he translated many Arabic books into Hebrew which were then translated into Latin and other European languages. An example of these books is the Canon of Avicenna. Second, he wrote a few books of his own. One of them is "Magala fi Tadbir Al-Sihha" (Regimen Sanitatis) which stressed proper diet, personal hygiene, and moderation in the pleasures of life. It was written in the form of letters to Sultan Al-Afdel. The other was "Kitab" Al-Fusul fi Al-Tibb" (Fisul Musa). This was a collection of 1,500 aphorisms

extracted from Galen writings together with forty-two critical remarks. Moses also wrote a book on poisons and their antidotes (Al-A'sar 1971).

When he died, the Jewish Community in Egypt built a synagogue and named it after him. Some Jews, until now stay overnight in this synagogue in the hope of receiving healing through the spirit of this great physician (Minkin 1968).

IBN-EL-NAFIS

1208 - 1288 A.D.

In 1208 A.D., Ala' El-Deen Ibn-El-Nafis was born in a small town near Damascus called Kersh (Ibrahim 1971). He studied medicine and philosophy in Damascus and spent most of his life in Cairo. He was a physician, a linguist, a philosopher, and a historian. He was the first chief of Al-Mansuri Hospital in Cairo and the Dean of the School of Medicine in 1284 A.D.

During this era, the medical profession together with other branches of science were facing a crisis. The Mongol Tartar invasion and destruction of Baghdad in 1258 A.D., caused an injury to the Islamic civilization from which it never recovered. It destroyed forever the Caliphate, symbolic unity of the Islamic Empire, and the pre-eminence of Baghdad as a center of learning. The Islamic culture was also declining in Spain at the time. Now Cairo and Damascus were the two centers of education and medical science. The medical profession there enjoyed the freedom of discussion and expression of opinion, something new in medicine and not known in Europe until the 17th century when Sedenham introduced it to England (Ibrahim 1971).

Ibn-El-Nafis was a dedicated person. He used to start his day with dawn prayers after which he would make rounds at the hospital, followed by case discussions with students and colleagues, and then hospital administration. His evenings were spent reading, writing and discussing medicine and philosophy with frequent scholar guests at his home in the El-Hussein District of Old Cairo. His house, made of marble with a fountain in the central hall, was a beautiful example of Arabic architecture.

In the history of mankind, there are persons whose importance is revealed with the flight of time and their truth glows with the passage of centuries. Ibn-El-Nafis is one of those. He wrote many books, ten of them on medicine and another one on philosophy. In the latter book "Fadel Ibn-Natik", he tried to counter the philosophical view of Avicenna expressed in his book "Hai Ibn-Yakzan". He was an authority in theology on which he

wrote several books, e.g. "The complete Message of the Prophet" and "Al-Ragol Al-Kamel" (The Perfect Man), supporting unitarianism. The significance of Ibn-El-Nafis's life and work lies in that he was a genuine scholar and not a mere follower. This is evident from his writings whether they are on philosophy or medicine.

On medicine he wrote many books, two of them are "Mujaz Al-Qanun" which means the "Summary of the Canon". In these two books which were based on Avicenna's writings, he criticized the shortcomings of Avicenna's work and of Galen's views and showed their weaknesses. That is why he was called by some as Avicenna the Second. For example he wrote "... We have relied chiefly on his (Galen) teachings, except for a few details which we think are wrong and were not given after a thorough investigation. In describing the function of the organs, we have depended on careful investigation, observation, and honest study, regardless of whether or not these fit with the teachings and theories of those who have preceded us."

Ibn-El-Nafis added to our knowledge of the physiology of the circulation. In ancient history, Erasistratus of the Alexandria School (310 B.C. - 250 B.C.) believed that blood was contained only in the right side of the circulation, namely the veins and the right side of the heart. The left side of the circulation, namely the left side of the heart and the arteries were supposed to contain air because arteries were found empty when an animal was sacrificed, hence the name "arteria".

When Galen came (131 - 210 A.D.), he described blood to pass from the right side of the heart to the left side through minute openings in the septum of the heart, then it mixed with air from the lungs, and subsequently distributed to the whole body. For centuries this was the prevalent belief and no one, including the Muslim physicians, even the most eminent one, like Avicenna, could dare challenge this sacrosanct view. Ibn-El-Nafis challenged this view. Five times he stated in unmistakable terms that "... the blood from the right chamber of the heart must arrive at the left chamber, but there is no direct pathway between them. The thick septum of the heart is not perforated and does not have visible pores as some people thought or invisible pores as Galen thought. The blood from the right chamber must flow through the vena arteriosa (pulmonary artery) to the lungs, spread through its substance, be mingled with air, pass through the arteria venosa (pulmonary vein) to reach the left chamber of the heart..." (Salem 1968). In describing the anatomy of the lung Ibn-El-Nafis stated: "The lung is composed of: first, the bronchi; second, the branches of the arteria venosa; and third, the branches of the vena arteriosa; all of these are connected by loose porous flesh.... The need of the lung for the vena arteriosa is to transport to it the blood that has been thinned and warmed in the heart, so that what seeps through the pores of the branches

of this vessel into the alveoli of the lung may mix with what is of air therein and combine with it... and the mixture is carried to the left cavity of the heart by the arteria venosa" (Haddad 1936).

Ibn-El-Nafis also made other contributions in the circulation. Avicenna, following Galen's description of the anatomy, stated that the human heart has three ventricles. Ibn-El-Nafis rejected this and said "... And his statement (Avicenna's) that the heart has three ventricles is not correct, as the heart has only two ventricles. ..." He was also the first to describe the coronary circulation: he wrote "... Again, his statement (Avicenna's) that the blood in the right side is to nourish the heart is not true at all, for the nourishment of the heart is from the blood that goes through the vessels that permeate the body of the heart...."

Three centuries after the discovery of the pulmonary circulation by Ibn-El-Nafis, others, such as Michael Servetus, Realdo Columbus, Carlo Ruini, Andrea Cesalpino, and Francois Rabelais, claimed the same thing (Mayerhof 1935). There is a strong suspicion that these authors obtained their knowledge from the Arabic literature which was available at that time to the European investigators but they failed to give due credit to Ibn El-Nafis (Keys 1971, Haddad 1942). It is not a mere coincidence that Servetus discovered the pulmonary circulation, and also wrote a book, similar to the one by Ibn-El-Nafis, on Unitarianism. Servetus was burnt with his book, "Restitutio Christianismi" in Geneva in October 1553 on the orders of Calvin for his heretical views.

THE ARABS AND OPHTHALMOLOGY

The Arabs were very interested in ophthalmology. In the ninth century, Hunayn Ibn-Ishak (Joannitius) translated into Arabic the Greek literature on the eye. As mentioned before, Al-Razi described the changes in the caliber of the eye produced by relaxation and contraction of the iris. He also described the cataract operation.

In 1050 A.D. at Baghdad, Ali Ibn-Isa (Jesu Haly) wrote the classic book on ophthalmology, Tathkirat Al-Kahhalin (A Note for the Oculists). As stated by Cunistan (1921), it is the oldest book in its original language on diseases of the eye. Written in a clear and logical style, the author described trachoma, conjunctivitis, and cataract, and prescribed treatment (Keys 1971). Avicenna described the six extrinsic muscles of the eyeball.

In the thirteenth century, Ibn Abu-Al-Kawafer wrote a book on therapeutic ophthalmology entitled "Natigat-El-Fikr fi Ilag Amrad El-Bassar", (Conclusions from Experience on Treatment of Diseases of the Eye). According to Kahil (1929), it is one of several textbooks on ophthalmology.

gy considered to be superior to any written in Europe up to the eighteenth century.

ARABS AND ANESTHESIA

Being an obstetric anesthesiologist, I feel obligated to write a little more on the contributions of the Arabs to both anesthesia and obstetrics.

First, in anesthesia, the Arabs described in detail the pharmacology of important narcotics such as opium and other central nervous system depressants such as hyoscyamus and hashish (Khairallal 1942). Burton (1886 A.D.) stated that "anesthetics have been used in surgery throughout the East for centuries before ether and chloroform became the fashion in the civilized West. In a Treatise on the Canon of Medicine by Gruner, it is stated by Avicenna under article 814 ANAESTHETICS: "If it is desirable to induce unconsciousness in a person quickly and without harming him, then add sweet smelling moss to the wine, or lignum aloes. If it is desirable to induce a deep unconscious state, so as to make the pain involved in painful surgery of an organ bearable place daniel-water into the wine, or administer fumitory, opium, hyoscyamus (half-dram doses of each); nutmeg, crude aloes-wood (4 grains of each). Add this to the wine, and take as much as is necessary for the purpose. Or, boil black hyoscyamus in water, with mandragore bark, until it becomes red. Add this to the wine."

The Arabs also introduced "the Soporific Sponge" which was commonly used for anesthesia in the middle ages. The sponge was soaked with aromatics and narcotics to be sucked and then held under the nostril to provide anesthesia prior to surgery (Keys 1971).

Avicenna wrote more than 1,000 years ago about the effect of pain on ventilation: "Pain dissipates the bodily strength and interferes with the normal functions of the organs. The respiratory organs are inhibited from drawing in air, and consequently the act of breathing is interfered with, and the respiration becomes intermittent, rapid, or altogether unnatural in rhythm" (Gruner 1930).

ARABS AND OBSTETRICS

Hunayn Ibn-Ishak (Joannitius, 809-873 A.D.) translated the work of the Greek pioneer in obstetrics, Paul of Aegina, into Arabic. Hunayn also introduced into the Arab world most of the works of Hippocrates, Galen, and Ptolemy. He was a gifted physician and philosopher. Ali Ibn-Al-Abbas Al-Majusi (Halle Abbas) who died in 994 A.D. was the first to describe in

his book "Al-Kitab Al-Malaki" (The Royal Book) that the uterine contractions are the cause of delivery of the fetus (Keys 1971). Before him, it was thought that the uterine contractions were only an indication of the onset of labor; subsequently the fetus would swim its way out of the womb and birth canal.

Most of the deliveries were performed by midwives at home. For complicated obstetrics, Al-Zahrawi offered advice to midwives, as mentioned before, used fetal craniotomy for delivery of obstructed labor, and introduced the required instruments. The operation of cesarean section was described in 1010 in the Book of Kings by Abul Kasim Al-Firdaws as shown in figure 8 (Speert 1973). It described cesarean section practiced on R 'uda'ba, the mother of King Rustam at his birth. Another reference for cesarean section is written by Al-Biruni in his book, Al-Athar Al-Bahiyah dated 1307 A.D. (Hitti 1977) as shown in figure 9 which is preserved in the library of the University of Edinburgh (Hitti 1977).

Ibn-Al-Quff (1233-1305) is another physician who contributed to perinatology. He was born in Jordan (Hamaneh 1971). In his book "Al-Jami", he presented original observations on embryology. He spoke of "... the formation of a foam stage in the first 6 to 7 days, which in 13 to 16 days, is gradually transformed into a clot and in 28 to 30 days into a small chunk of meat. In 38 to 40 days, the head appears separate from the shoulders and limbs. The brain and heart followed by the liver are formed before other organs. The fetus takes its food from the mother in order to grow and to replenish what it discards or loses There are three membranes covering and protecting the fetus, of which the first connects arteries and veins with those in the mother's womb through the umbilical cord. The veins pass food for the nourishment of the fetus, while the arteries transmit air. By the end of seven months, all organs are complete After delivery, the baby's umbilical cord, four fingers from the body, is cut and tied with fine, soft wooden twine. The area of the cut is covered with a filament moistened in olive oil over which a styptic is sprinkled to prevent bleeding After delivery, the baby is nursed by his mother whose milk is the best. Thereafter the midwife puts the baby to sleep in a darkened quiet room Nursing the baby is performed two to three times daily. Before nursing, the mother's breast should be squeezed out two or three times to get rid of the milk near the nipple." These findings of Ibn-Al-Quff, appear basic and fundamental, but seven hundred years ago, they were new and different.

CONCLUSION

One cannot help but look with admiration upon the way the Muslims handled their responsibility towards mankind. They not only preserved, but

also added to earlier achievements in medicine. They have kindled the flame of civilization, made it brighter, and handed it over to Europe in the best possible condition. Europe, in turn, passed it to the United States of America, and the cycle continues.

BIBLIOGRAPHY

- AL-A'SAR Y.H.: Lights on History of Science. Famous physicians of the Western part of the Arab World. Hospital Medical Practice, Cairo, Egypt, 2:1-3, 1972.
- IL-A'SAR Y.H.: Lights on History of Science. Famous physicians of the Eastern part of the Arab World. Hospital Medical Practice, Cairo, Egypt 1: 14-29, 1971.
- AL-OKBI, M.D.: Lights on History of Science: Abu Al-Khasim Al-Zahrawi, the pioneer in surgery. Hospital Medical Practice. Cairo 1:14-29, 1971.
- AMARI, STORIA, ed. Nallino, vol i, pp. 588-93 (from Hitti P. K. 1977, p. 604).
- BLACK M. ROTH C: Maimonides. Merit Students Encyclopedia Vol. 11, 409 Crowell-Collier Educational Co. 1970.
- BLACK, M: Averroes. Merit Students Encyclopedia Vol. 2, 476, Crowell-Collier Educational Co. 1970.
- BROWNE, E.G.: Arabian Medicine: Cambridge at the University Press, 1962.
- BURTON, L. edition of 1001 Nights (Six volumes), 1886.
- CAMPBELL, DAVID: Arabian Medicine and its influence on the middle ages. Kegan Paul. French, Frubner & Co. London, 1926, Vol. 1, pp. 69-77.
- CUSTON, C.G.: A Brief Historical Summary of the Treatment of Trachoma, With a Special Reference to the Arabian School and the Writing of Ali Ibn-el-Aissa (Jesu Hali). Am. M. Hist. 3:244-251, 1921.
- EIGELAND, T: Islam in Al-Andalus, Aramco World Magazine 27/5, Sept. Oct., 1976.
- GARRISON, FIELDING A: An Introduction to the History of Medicine with Medical Chronology, Suggestions for Study and Bibliographic Data. W.B. Saunders Co., Philadelphia, 1929
- GRUNER, O.C.: A treatise on the Canon of Medicine of Avicenna, Incorporating a Translation of the First Book. London, Luzac & Co. 1930.
- HADDAD S.I. and KHAIRALLAH A.A.: A forgotten Chapter in the History of the Circulation of the Blood. Annuals of Surgery 104:1-8, 1936.
- HADDAD, S.I.: Arabian Contributions to Medicine. Anna Med. Hist. 3:60-72, 1942.
- ✕ HAMARNEH S.: The Physician and the Health Professions in Medieval Islam. Bull. N.Y. Acad. Med. 47:1088-1110, 1971.

- ✓✕ HAMARNEH, S.: Development of Hospitals in Islam. *J. History of Med. and Allied Sciences* 17:366-84, 1962.
- HAYKAL, M.H.: The life of Mohammed, 8th edition, North American Trust Publications, 1976.
- HITTI, P.K.: History of the Arabs, 10th Edition, St. Martin's Press, New York, 602-614, 1977.
- IBN-KHALDUN, vol. IV, p. 201.
- IBRAHIM, S.: Lights on History of Science: Ibn-El-Nafis. *Hospital Medical Practice*. Cairo 1:35-39, 1971.
- KAHIL, N.: Une ophthalmologie Arabe par un praticien en due Caire du XIII, me siecle - VII me de l'Hegire. *Rend. Internat. Med. Trop.* Cairo 2:241-260, 1929.
- ✓ KEYS, T.E., WAKIM, K.G.: Contributions of the Arabs to Medicine. *Staff Meetings of the Mayo Clinic* 28:42-437, 1971.
- ✕✕ KHAIRALLAH, A.A.: Arabic Contributions to Anatomy and Surgery. *Ann Med. Hist* 3:4: 409-15, 1942.
- LEVY, M.: Medical Ethics of Medieval Islam with Special Reference to Al-Ruhawis, "Practical Ethics of the Physician". *May* 19(17, Vol. 57 Part 3.
- MEYERHOF, M.: Ibn-El-Nafis (XIIIth Cent) and His Theory of the Lesser Circulation. *Isis* 23:100-120, 1935.
- ✕ MINKIN, J.S.: The World of Moses Maimonides: Thomas Yoseloff Inc, New York, 1968.
- PARENTE, P. The Medical School of Salerno in the Regimen of Health of the Medical School of Salerno. N. Y. Vantage Press, 1967, pp. 15-20.
- Profile of Iran. Health fare in Iran. *May* 1977, 2536. Vol. 11, No. 5.
- SALEM, R.A.: Discovery of the Pulmonary Circulation by an Arab in the 13th century. *Anesthesia & Analgesia...* *Current Researches*. 47:587-588, 1968.
- SARTON, C. Introduction of the history of Science, Vol. 1 Baltimore, Carnegie Inst. of Wash. 1950.
- SPEERT, H.: *Iconographia Gynaetrica and Obstetrics*. Philadelphia: T.A. Davis Co. 1973.

MEDICINE AND MEDICAL EDUCATION IN ISLAMIC HISTORY

Ibrahim B. Syed¹

MEDICAL EDUCATION

In 636 A.D., the Persian City of Jundi-Shapur, which originally meant beautiful garden, was conquered by the Muslims. Its great university and hospital were left intact. Later other Islamic medical schools were built according to the Jundi-Shapur pattern. Medical education was serious and systematic. Lectures and clinical sessions included in teaching were based on the apprentice system. The advice given by Ali ibnul-Abbas (Haly Abbas: - 994 A.D.) to medical students is as timely today as it was then². "And of those things which were incumbent on the student of this art (medicine) are that he should constantly attend the hospitals and sick houses; pay unremitting attention to the conditions and circumstances of their inmates, stay in company with the most astute professors of medicine, and inquire frequently as to the state of the patients and symptoms apparent in them, bearing in mind what he has read about these variations, and what they indicate of good or evil."

Razi (Razes: 841-926 A.D.) advised the medical students that while they examine a patient, they should bear in mind the classic symptoms of a disease as given in textbooks and compare them with what they found³.

The ablest physicians such as Razi (Al-Razes), Ibn-Sina (Avicenna: 980-1037 A.D.) and Ibn Zuhr (Avenzoar: 116 A.D.) worked both as the hospital directors and the deans of medical schools. They studied patients

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²E.G. Browne, "Arabian Medicine," Cambridge University, M. Sirajuddin and sons Publishers, Lahore, 1962, pp.5-16.

³G. Podgorny, N. Carolina Med. J. 27, 197-208, (1966).

and prepared them for student presentation. Clinical reports of cases were written and preserved for teaching,⁴ and regular registers were maintained.

Training in Basic Science

Only Jundi-Shapur or Baghdad had separate schools for studying basic sciences. Candidates for medical study received basic preparation from private tutors through private lectures and self study. In Baghdad anatomy was taught by dissecting the apes, observing skeletal studies, and studying didactics. Other medical schools taught anatomy through lectures and illustrations. Alchemy was one of the prerequisites for admission to a medical school. The study of medicinal herbs and pharmacognosy rounded off the basic training. A number of hospitals maintained herbal gardens as a source of drugs for the patients and a means of instruction for the students.

Upon completion of the basic training, a candidate was admitted as an apprentice to a hospital where, along with a large group, he was assigned to a young physician for indoctrination, preliminary lectures, and familiarization with library procedures and uses. During this preclinical period, most of the lectures were on pharmacology and toxicology and the use of antidotes.

Clinical training

The next step was to give the student full clinical training. During this period students were assigned in small groups to famous physicians and experienced instructors, for ward rounds, discussions, lectures, and reviews. Early in this period therapeutics and pathology were taught. There was a strong emphasis on clinical instruction and some Muslim physicians contributed brilliant observations that have stood the test of time. As the students progressed in their studies they were exposed more and more to the subjects of diagnosis and judgment. Clinical observation and physical examination were stressed. Students (or clinical clerks) were asked to examine a patient and make a diagnosis of the ailment. Only after all else had failed would the professor make the diagnosis himself. While performing physical examination, the students were asked to examine and report six major factors: the patients' actions, excreta, the nature and location of pain, and swelling and effluvia of the body. Also noted was color and feel of the skin-whether hot, cool, moist, dry, flabby. Yellowness in the whites of the eye (jaundice) and whether or not the patient could bend his back (lung disease) was also considered important.⁵

⁴A. S. Lyons, and R. J. Petrucelli, "Medicine - An Illustrated History", H. N. Abrams Inc., Publishers, New York, 1978, pp 295-317.

⁵F. H. Garrison, "History of Medicine," 4th Edition, W. B. Saunders Co., Philadelphia, 1929, p. 134.

After a period of ward instructions, students were assigned to outpatient areas. After examining the patients, they reported their findings to the instructors. After discussion, treatment was decided and prescribed. Patients who were too ill were admitted as inpatients. The maintenance of records for every patient was the responsibility of the students.

Curriculum

Different medical schools pursued different clinical curriculum and offered separate courses of studies, but the mainstay was usually internal medicine. Emphasis was placed on clarity and brevity in describing a disease and the separation of each entity. Until the time of Ibn Sina the description of meningitis was confused with acute infection accompanied by delirium. Ibn Sina described the symptoms of meningitis with such clarity and brevity that there is very little that can be added to it even after a thousand years⁽⁶⁾. Surgery was also a part of the curriculum. After completing the prescribed course of studies, some students specialized under famous specialists, while others specialized during their clinical training. According to Elgood,⁶ knowledge of many surgical procedures such as amputation, excision of varicose veins, and hemorrhoids was essential. Orthopedics was widely taught, and the use of plaster of paris for casts after reduction of fractures was routinely shown to students. This method of treating fractures was rediscovered in the West in 1852. Although ophthalmology was practiced widely, it was not taught regularly in medical schools. Apprenticeship to an eye doctor was the preferred way of specializing in ophthalmology. Surgical treatment of cataract was very common. Obstetrics was left to midwives. Medical practitioners consulted among themselves and with specialists. Ibn Sina and Hazi both widely practiced and taught psychotherapy. After completing his medical training, every medical graduate was required to pass a licensing examination before starting his medical practice. It is important to note that there existed a Scientific Association which was formed in the hospital of Mayyafariqin to discuss the conditions and diseases of the patients.⁷

Licensing of Physicians

In Baghdad in 931 A.D., Caliph Al-Muqtadir learned that a patient had died as the result of a physician's error. Thereupon he ordered his chief physician, Sinan ibn Thabit bin Qurrah to examine all those who practiced the art of healing. In the first year of the decree more than 860 were exam-

⁶ G. Elgood. "A Medical History of Persia", Cambridge University Press, Cambridge, 1951, pp.278-301.

⁷ H. N. Wasty, "Muslim Contribution to Medicine", M. Sirajuddin and Sons Publishers, Lahore, 1962, pp. 5-16.

ined in Baghdad alone. From that time on, licensing examinations were required and administered in various places. Licensing Boards were set up under a government official called Muhtasib or inspector general.^{8*} The Muhtasib also inspected weights and measures of traders and pharmacists. Pharmacists were employed as inspectors to inspect drugs and maintain quality control for drugs sold in a pharmacy or apothecary. The chief physician gave oral and practical examinations, and if the young physician was successful, the Muhtasib administered the Hippocratic oath and issued a license. After a thousand years, licensing of physicians has been implemented in the West, particularly in America by the State Licensing Board of Medicine. For specialists we have the American Board of Medical Specialties such as in Medicine, Surgery, Radiology, etc. European medical schools followed the pattern set by the Islamic medical schools and even in the early nineteenth century, students at the Sorbonne could not graduate without reading Ibn Sina's Qanun (Canon). According to Razi a physician had to satisfy two conditions for selection: firstly, he was to be fully conversant with the new and the old medical literature, and secondly, he must have worked in a hospital as house physician.

HOSPITALS

The development of efficient hospitals was an outstanding contribution of Islamic medicine (7). The hospitals served all citizens free and without any regard to their color, religion, sex, age or social status. The hospitals were run by government and their directors were physicians.

Hospitals had separate wards for male and female patients and were staffed with nursing and other ancillary staff of the same sex. Different diseases such as fever, wounds, infections, mania, eye conditions, cold diseases, diarrhea, and female disorder were allocated different wards. Convalescence centers were divided into separate sections. Hospitals provided patients with unlimited water supply and bathing facilities. Only qualified and licensed physicians were allowed by law to practice medicine. The hospitals were teaching hospitals to educate and train medical students. They had housing for students and house-staff,⁹ and contained pharmacies dispensing free drugs to patients. All hospitals had their own conference rooms and expensive libraries containing the most up-to-date books. According to Haddad¹⁰, the library of the Tulum Hospital which was founded in Cairo in 872 A.D. (1100 years ago) had 100,000 books.

⁸S. Hamarneh, *Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften*, 48, 159-173, (1964).

— ⁹E. Abouleish, *J. Islamic Med. Asso.*, 10(3,4), 28-45, (1979).

¹⁰F. S. Haddad, *Leb. Med. J.* 26, 331-346, (1973).

Universities, cities and hospitals acquired large libraries, physicians had their own extensive personal book collections, at a time when printing was unknown and book editing was done by skilled and specialized scribes putting in long hours of manual labor. Mustansiriyya University in Baghdad contained 80,000 volumes; the library of Cordova 600,000 volumes; that of Cairo 2,000,000 and that of Tripoli 3,000,000 books.

These hospitals kept records of all their patients and their medical care, something done for the first time in medical history.

For considerations of treatment, the hospital was divided into two main departments, out-patient and in-patient departments. The in-patient department differed only slightly from any modern in-patient department. At the Tulum hospital, on admission the patients were given special apparel while their clothes, money, and valuables were stored away, and returned to them at the time of their discharge. On discharge, they also received five gold pieces each to tide them over until they could support themselves.

The hospital and medical school at Damascus had elegant rooms and an extensive library. Healthy people are said to have feigned illness in order to enjoy its cuisine. There was a separate hospital in Damascus for lepers, while, in Europe, even six centuries later, lepers were condemned and burned to death by royal decree.

The Qayrawan Hospital (built in 830 A.D. in Tunisia) was characterized by its spacious wards, waiting rooms for visitors and patients, and female nurses from Sudan, the first account of nursing in Arab history. The hospital also provided facilities for performing prayers.

The Al-Adudi hospital (built in 981 A.D. in Baghdad) was furnished with the latest equipment and supplies available at the time. It had interns, residents, and 24 consultants attending its professional activities. An Abbasid minister, Ali ibn Isa, requested the court physician, Sinan ibn Thabit, to organize regular visiting of prisons by medical officers.¹¹

At a time when Paris and London were mud streets and hovels, Baghdad, Cairo, and Cordova had hospitals which incorporated innovations which sound amazingly modern. It was chiefly in the humaneness of patient care that the Muslim hospitals excelled. Near the wards of those afflicted with fever, fountains cooled the air; the insane were treated with gentleness; and at night music and storytelling soothed the patients.¹²

The Bimaristans (hospitals) were of two types - the fixed and the mobile. The mobile hospitals were transported upon beasts of burden and were erected from time to time as required. The physicians in the mobile clinics were of the same standing as those who served the regular in the

¹¹ Y. A. Shahine, "The Arab Contribution to Medicine", Longman for the University of Essex, London, 1971, p. 10.

¹² B. Miller, *Mankind*, 6(8), 8-40, (1980).

hospitals. Similar mobile hospitals accompanied the armies in the field. The field hospitals were well equipped with medicaments, instruments, tents and a staff of doctors, nurses, and orderlies. The travelling clinics served the totally disabled, the disadvantaged and those in remote areas. These hospitals were also used by prisoners, and by the general public, particularly in times of epidemics.

BACTERIOLOGY

Al-Razi was asked to choose a site for a new hospital when he came to Baghdad. In order to choose the most hygienic area, he hung pieces of meat in different parts of the city and observed where they decomposed the least.

Ibn Sina stated explicitly that the bodily secretion is contaminated by foul earthly body before getting infected. Ibn Khatima stated that man is surrounded by minute bodies which enter the human system and cause disease.

In the middle of the fourteenth century when the "black plague" ravaged Europe and Christians stood helpless, considering it an act of God, Ibn al Khatib of Granada composed a treatise in the defense of the theory of infection in the following way:¹³

To those who say, "How can we admit the possibility of infection while the religious law denies it?" we reply that the existence of contagion is established by experience, investigation, the evidence of the senses and trustworthy reports. These facts constitute a sound argument. The fact of infection becomes clear to the investigator who notices how he who establishes contact with the afflicted gets the disease, whereas he who is not in contact remains safe, and how transmission is affected through garments, vessels and earrings.

Al-Razi wrote the first medical description of smallpox and measles - two important infectious diseases. He described the clinical difference between the two diseases so vividly that nothing since has been added.¹⁴ Ibn Sina suggested the communicable nature of tuberculosis. He is said to have been the first to describe the preparation and properties of sulfuric acid and alcohol. His recommendation of wine as the best dressing for wounds was very popular in medieval practice.⁽⁸⁾ However Razi was the first to use silk sutures and alcohol for hemostasis.¹⁵ He was also the first to use alcohol as an antiseptic.⁽²⁾

¹³"Aspects of Muslim Civilization", Pakistan Branch of Oxford University Press, Lahore, 1961, pp. 53.

¹⁴T. E. Keys, K. G. Wakim, Mayo Clinic Proceedings of the Staff Meeting, 28, 423-437.

¹⁵M. Siddiq, "Studies in Arabic and Persian Medical Literature", Calcutta University, Calcutta, 1959, p. XX.

ANESTHESIA

Ibn Sina originated the idea of the use of oral anesthetics.⁽¹⁷⁾ He recognized opium as the most powerful *mukhadir* (intoxicant or drug). Less powerful anesthetics known at the time were mandragora, poppy, hemlock, hyoscyamus, deadly nightshade (belladonna), lettuce seed, and snow or ice cold water. The Arabs invented the soporific sponge which was the precursor of modern anesthesia. It was a sponge soaked with aromatics and narcotics and held to the patient's nostrils.⁽¹⁷⁾

The use of anesthesia in Islam was one of the reasons why surgery rose to the level of an honorable profession, while in Europe, surgery was belittled and practiced by barbers and quacks. The Council of Tours in 1163 A.D. declared "Surgery is to be abandoned by the schools of medicine and by all decent physicians"⁽¹²⁾. Burton¹⁶ stated that "anesthetics have been used in surgery throughout the East for centuries before ether and chloroform became the fashion in civilized West."

SURGERY

Al-Razi is the first to use the seton in surgery¹⁷ and animal gut for sutures.¹⁸ Abu alQasim Khalaf Ibn Abbas Al-Zahrawi (930-1013 A.D.), known to the west as Abulcasis, Bucasis or Alzahravius, is considered to be the most famous surgeon in Islamic medicine. In his book *Al-Tasrif*, he described hemophilia for the first time in medical history. The book contains the description and illustration of about 200 surgical instruments many of which were devised by Zahrawi himself.¹⁹ In it Zahrawi stresses the importance of the study of Anatomy as a fundamental prerequisite to surgery.⁽¹²⁾ He advocates the reimplantation of a fallen tooth and the use of dental prosthesis carved from cow's bone, a better alternative to the wooden dentures worn by the first President of America, George Washington seven centuries later.⁽¹⁵⁾ Zahrawi appears to be the first surgeon in history to use cotton (Arabic word) in surgical dressings in the control of hemorrhage, as padding in the splinting of fractures, as a vaginal padding in the tearing of the pubis and in dentistry. He introduced the method for the removal of kidney stones by cutting into the urinary bladder. He was the first to teach the lithotomy position for vaginal opera-

¹⁶L. Burton, "1001 Nights (Six Volumes)", 1886.

¹⁷P. Hitti, "The Arabs: A Short History", Henry Regnery, Chicago, 1943, p. 143.

¹⁸A. Castiglioni, "A History of Medicine", E. Krumbhaar (trans.), Alfred A. Knopf, New York, 1958, p. 258.

¹⁹C. Singer and A. A. Underwood, "A Short History of Medicine", 2nd edn. Oxford University Press, New York, 1962, p. 76.

tions.²⁰ He described tracheotomy, distinguished between goiter and cancer of the thyroid, and explained his invention of a cauterizing iron which he also used to control bleeding. His description of varicose veins stripping, even after ten centuries, sounds almost like modern surgery.²¹ In orthopedic surgery he introduced what is called today Kocher's method of reduction of shoulder dislocation and patellectomy²², a thousand years before Brooke reintroduced it in 1937.(13)

Ibn Sina's description of the surgical treatment of cancer holds true even today after 1,000 years. He says the excision must be wide and bold; all veins running to the tumor must be included in the amputation. Even if this is not sufficient, then the area affected should be cauterized.(9)

The Muslim surgeons performed three types of surgery: vascular, general, and orthopedic. Ophthalmic surgery was a specialty which was quite distinct both from medicine and surgery. They freely opened the abdomen and drained the peritoneal cavity in the approved modern style. To an unnamed surgeon of Shiraz is attributed the first colostomy operation. Liver abscesses were treated by puncture and exploration. Today surgeons all over the world practice and use several surgical procedures first introduced by Zahrawi a thousand years ago.(25)

MEDICINE

One of the most brilliant contribution to medicine was made by Al-Razi who differentiated between smallpox and measles, two diseases that were hitherto thought to be one single disease.²³ He is credited with many contributions: he was the first to describe true distillation, glass retorts and luting, corrosive sublimate, arsenic, copper sulfate, iron sulfate, saltpeter, and borax in the treatment of diseases.²⁴ He introduced mercury compounds as purgatives (after testing them on monkeys); mercurial ointments and lead ointment.²⁵ His interest in urology focused on problems involving urination, venereal disease, renal abscess, and renal and vesical calculi.(28) He described hay-fever or allergic rhinitis.²⁶

Among other Arab contributions to medicine are included the discovery of itch mite of scabies (Ibn Zuhr), anthrax, ankylostoma and the guinea-

²⁰A. A. Khairallah, *Ann. Med. Hist.* 34, 409-415, (1942).

²¹Al-Okabi, *Hospital Med. Prac.*, Cairo, 1, 14-29, (1971).

²²F. S. Haddad, "XXI International Congress of the History of Medicine" (Sienna 1968, Sep 22), 1970, pp. 1600-1607.

²³G. A. Bender, "Great Moments in Medicine", Parke-Davis, Detroit, 1961, p. 68-74.

²⁴G. Fisher, *Ann. Anat. Surg.*, 6 216-217, (1882).

²⁵E. D. Whitehead and R. B. Bush, *Invest. Urology*, 5.

²⁶F. Haddad, *Leb. Med. J.* 21, 67, (1968).

worm by Ibn Sina, and sleeping sickness by Qalqashandy.⁽¹³⁾ They described abscess of the mediastinum. They also understood tuberculosis and pericarditis.⁽⁷⁾

Al Ash'ath demonstrated gastric physiology by pouring water into the mouth of an anesthetized lion and showed the distensibility and movements of the stomach, preceding Beaumont by about a thousand years⁽¹³⁾. Abu Sahl al-Masihi explained that the absorption of food takes place more through the intestines than the stomach.⁽¹⁰⁾ Ibn Zuhr introduced artificial feeding either by gastric tube or by nutrient enema.⁽¹³⁾ Using the stomach tube, the Arab physicians performed gastric lavage in case of poisoning.⁽¹⁰⁾ Ibn Al-Nafis was the first to discover pulmonary circulation.²⁷

Ibn Sina in his masterpiece *Al-Qanun* (Canon), containing over a million words, described complete studies of physiology, pathology and hygiene. He specifically discoursed upon breast cancer, poisons, diseases of the skin, rabies, insomnia, childbirth and the use of obstetrical forceps, meningitis, amnesia, stomach ulcers, tuberculosis as a contagious disease, facial ties, phlebotomy, tumors, kidney diseases and geriatric care. He defined love as a mental disease.

OPHTHALMOLOGY

The Arab physicians exhibited a high degree of proficiency and certainly were foremost in the treatment of eye diseases. Words such as retina and cataract are of Arabic origin. In ophthalmology and optics Ibn al Haytham (965-1039 A.D.) known to the West as Alhazen wrote the *Optical Thesaurus* from which such worthies as Roger Bacon, Leonardo da Vinci and Johannes Kepler drew theories for their own writings. In his *Thesaurus* he showed that light falls on the retina in the same manner as it falls on a surface in a darkened room through a small aperture, thus conclusively proving that vision happens when light rays pass from objects towards the eye and not from the eye towards the object as thought by the Greeks.²⁸ He presents experiments for testing the angles of incidence and reflection, and a theoretical proposal for magnifying lens (made in Italy three centuries later). He also taught that the image made on the retina is conveyed along the optic nerve to the brain. Razi was the first to recognize the reaction of the pupil to light, and Ibn Sina was the first to describe the exact number of extrinsic muscles of the eyeball, namely six. The greatest contribution of Islamic medicine in practical ophthalmology was in the matter of cataract. The most significant development in the extraction of cataract was devel-

²⁷S. A. Al-Dabbagh, *Lancet*, 1(8074), 1148, (1978).

²⁸B. Lewis (editor), "Islam & the Arab World", American Heritage Publishing Co., Inc., New York, 1976, pp. 187-200.

oped by Ammar bin Ali of Mosul, who introduced a hollow metallic needle through the sclerotic and extracted the lens by suction. Europe rediscovered this in the nineteenth century.

PHARMACOLOGY

Pharmacology took roots in Islam during the 9th century. Yuhanna bin Masawayh (777-857 A.D.) started scientific and systematic applications of therapeutics in the Abbasid capital. His student Hunayn bin Ishaq al-Ibadi (809-874 A.D.) and his associates established solid foundations of Arabic medicine and therapeutics in the ninth century. In his book *al-Masail* Hunayn outlined methods for confirming the pharmacological effectiveness of drugs by experimenting with them on humans. He also explained the importance of prognosis and diagnosis of diseases for better and more effective treatment.²⁹

Pharmacy became an independent and separate profession from medicine and alchemy.³⁰ With the wild sprouting of apothecary shops, regulations became necessary and were imposed to maintain quality control.⁽¹¹⁾ The Arabian apothecary shops were regularly inspected by a syndic (Muhtasib) who threatened the merchants with humiliating corporal punishments if they adulterated drugs.³¹ As early as the days of al-Mamun and al-Mutasim pharmacists had to pass examinations to become licensed professionals and were pledged to follow the physician's prescriptions. Also by this decree, restrictive measures were legally placed upon doctors, preventing them from owning or holding stock in a pharmacy.

Methods of extracting and preparing medicines were brought to a high art, and their techniques of distillation, crystallization, solution, sublimation, reduction and calcination became the essential processes of pharmacy and chemistry. With the help of these techniques, the Saydalanis (pharmacists) introduced new drugs such as camphor, senna, sandalwood, rhubarb, musk, myrrh, cassia, tamarind, nutmeg, alum, aloes, cloves, coconut, nux vomica, cubebs, aconite, ambergris and mercury.⁽⁸⁾ The important role of the Muslims in developing modern pharmacy and chemistry is memorialized in the significant number of current pharmaceutical and chemical terms derived from Arabic: drug, alkali, alcohol, aldehydes, alembic, and elixir among others, not to mention syrups and juleps. They invented flavoring extracts made of rose water, orange blossom water, orange and lemon peel, tragacanth and other aromatic ingredients. Space does not permit me to list the contributions to pharmacology and therapeutics, made by

²⁹ S. Hamarneh, *Sudhoffs Archiv*, 54, 30-48, (1974).

³⁰ S. Hamarneh, *Pharmacy in Islam, Med. Hist.* 6, 59-63, (1962).

³¹ Guigues, *Bull. d. Sc. Pharm. Paris*, XXIII, 107-118, (1916).

Razi, Zahrawi, Biruni, Ibn Butlan, and Tamimi.³²

PSYCHOTHERAPY

From freckle lotion to psychotherapy - such was the range of treatment practiced by the physicians of Islam. Though freckles continue to sprinkle the skin of 20th century man, in the realm of psychosomatic disorders, both Al-Razi and Ibn Sina achieved dramatic results, antedating Freud and Jung by at least a thousand years.⁽¹⁵⁾ When Razi was appointed physician-in-chief to the Baghdad Hospital, he devoted a ward exclusively for the mentally ill making it the first hospital ever to have such a ward.³³

Al-Razi combined psychological methods and physiological explanations, and he used psychotherapy in a dynamic fashion. Al-Razi was once called in to treat a famous caliph who had severe arthritis. He advised a hot bath, and while the caliph was bathing, Razi threatened him with a knife, saying he was going to kill him. This deliberate provocation increased the natural caloric, enhanced its strength, and consequently dissolved the already softened humors, so that the caliph stood up in the bath and ran after Al-Razi.³⁴

The Arabs brought a refreshing spirit of dispassionate clarity into psychiatry. They were free from the demonological theories which swept over the Christian world and were therefore able to make clearcut clinical observations about the mental diseases.³⁵

Najab ud din Muhammad,³⁶ a contemporary of Al-Razi, has left many excellent descriptions of various mental diseases. His carefully compiled observations about the patients made up the most complete classification of mental diseases theretofore known.⁽³⁹⁾ Najab described agitated depression, obsessional types of neurosis, *Nafkhae Malikholia* (combined priapism and sexual impotence), *Kutrib* (a form of persecutory psychosis), Dual-Kulb (a form of mania).⁽⁴⁰⁾

Ibn Sina recognized 'physiological psychology' in treating illnesses involving emotions.³⁷ From the clinical perspective Ibn Sina developed a system for associating changes in the pulse rate with inner feelings which

³²S. H. Nasr (editor), *Ismaili Contribution to Islamic Culture*, Imperial Iranian Academy of Philosophy, Tehran, 1977, pp. 143-185.

³³F. G. Alexander and S. T. Selesnick, "The History of Psychiatry", Harper & Row, New York, 1966, p. 62.

³⁴Browne, op. cit., p. 83.

³⁵G. Zilboorg, "A History of Medical Psychology", W. W. Norton & Co., New York, 1941, p. 123.

³⁶Ibid., p. 124.

³⁷R. D. Clements, *Minnesota Medicine*, 49, 187-192, (1966).

has been viewed as predating the word association test of Jung.³⁸ He is said to have treated a seriously ill patient by feeling the patient's pulse and reciting aloud to him the names of provinces, districts, towns, streets, and people. By noticing how the patient's pulse quickened when names were mentioned, Ibn Sina deduced that the patient was in love with a girl whose home Ibn Sina was able to locate by the digital examination. The man took Ibn Sina's advice, married the girl, and recovered from his illness.³⁹

It is not surprising to know that at Fez, Morocco, an asylum for the mentally ill had been built early in the 8th century, and mental asylums were also built by the Arabs in Baghdad in 705 A.D., in Cairo in 800 A.D., and in Damascus and Aleppo in 1270 A.D.⁴⁰ In addition to baths, drugs, kind and benevolent treatment given to the mentally ill, musico-therapy and occupational therapy were also employed. These therapies were highly developed. Special choirs and live music bands played daily to entertain the patients by singing, music, and other light-hearted performances.(13)

³⁸G. Mora, *J. Hist. Behav. Scs.*, 16, 58-72, (1980).

³⁹Browne, *op. cit.*, p. 85.

⁴⁰E. H. Ackerknecht, "A Short History of Psychiatry" trans. by S. Wolff, Hafner Publishing Co., New York, 1959.

THE RISE AND DECLINE OF SCIENCE IN ISLAM¹

Ayub K. Ommaya, M.D.²

For the non-believer it is not easy to understand evolution of science in Islam without the context in which it developed, i.e., the world civilization created by the religion of Islam. An overwhelming release of energy, Islamic culture exploded as it were, onto the pages of human history starting in the 40th year of the life of the Prophet Muhammad, an illiterate but respected trader in Arabia who received the Divine revelation at the turn of the 7th century of the Christian Era. (1)

The form in which the Islamic sciences were produced was not, to use the phrase of Jacques Monod, (2) a matter of mere "chance and necessity." It was the direct consequence of the unique transformation of human minds by Islam and secondarily the social conditions resulting from the radical change in a tribal culture interacting with more advanced societies. The cultural changes which followed developed rapidly, first in the heartlands of the Middle East and adjacent nations, but ultimately spreading the Islamic venture into China and Indonesia in the east and to Europe in the West. Accompanying these dramatic changes in the social and ethical codes of a large variety of nationalities, there was also a remarkable ingathering and synthesis of existing human knowledge. The Muslims brought together what was known about science and learning in all its forms from Egyptian, Babylonian, Indian, Greek, Iranian, Sabaen and Chinese sources (Fig. 1). This was an immense encyclopedic effort which laid the foundations for new developments in experimental method, theory and technologic applications. These developments, however, in the sense of

¹An Al Razi Lecture, presented at the 21st Annual Convention of Islamic Medical Association of North America, held at Anaheim, California, on Friday, July 8, 1988.

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that word as we know it today was part and parcel of the essential doctrine of Islam, which regarded reflecting upon the works of god primary function of any sensible human being. The tone and style of Islamic civilization and the Muslim mind was determined by the Book of Allah which repeatedly emphasized the necessity of reflecting on the laws of nature:

"Verily in the creation of the heavens and of the Earth and in the alternation of the night and the day are signs for men of understanding. They who standing, sitting or reclining bear Allah in mind and reflect on the creation of the Heavens and of the Earth, saying, . 'O our Lord! Thou hast not created this in vain.'" (Qur'an 3:191)

"Are those who know equal with those who know not? But only men of understanding will pay heed." (Qur'an 39:9)

"We shall show them our portents on the horizons and within themselves until it will be manifest unto them that it is the Truth." (Qur'an 41:53)

There are "750 verses of the Qur'an (almost one eighth of the Book) — which exhort believers to study Nature, to reflect, to make the best use of the reason in their search for the ultimate and to make the acquiring of knowledge and scientific comprehension part of the community's life." Similarly in the sayings of the Prophet Muhammad (p.b.u.h.) we find similar emphasis on knowledge, and its close relationship with moral and spiritual excellence.

"Seek knowledge from the cradle to the grave"

"Verily the men of knowledge are the inheritors of the prophets"

The message of Islam is most of all concerned with what a human being is, or more precisely put, how can humans fully become what he or she really is in their primordial nature (fitrah), i.e., a theomorphic being created to reflect the Divine in all its Beauty and Majesty. This metaphysical doctrine is the supreme "science of the sacred" contained within the inner dimensions of the Qur'an and has two aspects: the fundamental Unity of the Principle (Al-tawhid) and the interrelatedness of all the diversity in nature brought into being by the creative act (the "kun" of the Qur'anic statement "Be and it is"). The other aspect is the human complement of this principle as in the doctrine of the Universal human (al-insan al-kamil) in whom the true fulness of the human state is realized and through whom multiplicity and the apparent diversity of nature returns to Unity. This unifying perspective of Islam requires that whatever forms of knowledge be developed, they must be interpreted in such a way as to reflect the true structure of Reality which is God. Another way to put this would be to say

that because Islam aims at a total harmony of belief and action, intellectual compartmentalization of science, art and religion and the creation of subjective-objective dichotomies in our understanding of who we are, our place in nature and how God fits into our conception of reality, should be viewed as inadequacies of knowledge and as such, they are stumbling blocks to be overcome in the evolution of universal human beings.

Bearing this in mind we may legitimately ask what are the factors which led to the paradox of an Islamic civilization which led the world in science for almost 400 years and then entered a long period of scientific and technological decline in which it has become seriously depleted of the very power it once so brilliantly shaped and used? This decline shows no sign of being overcome in spite of the continuing and growing strength of exoteric Islam. How is it that what was once a unified way of believing and acting in this world that produced world class leaders in science and set the stage for the Renaissance fell so low?

THE RISE OF SCIENCE IN ISLAM

Having placed our subject securely in the context of Islam, I will now briefly review some facts about the Muslim contributions to science. As heirs to the intellectual heritage of all the major civilizations of that time (excepting that of China and the Far East), Islam was able to create the first science of a truly international nature in human history. This was the direct consequence of the universal nature of Islam as well as the geographical spread of Islamic culture. The primary sources were of Greek, Indian and Persian origins with Chinese scientific works being integrated after the Mongol invasion. The actual process by which these source materials were translated from such diverse languages as Greek, Syriac, Sanskrit and Pahlavi into Arabic is probably one of the unique examples of accelerated cultural transmission. In both quantitative and qualitative terms this effort surpassed all similar efforts e.g., the translation of the Buddhist texts into Chinese and of Arabic works into Latin in medieval Europe. (4,6)

How significantly did Islamic culture and the work of Muslims affect the course of scientific history? An approximate measure of this contribution is given by George Sarton in his three volume history of science. (7)

Sarton divides his account of the highest achievement in science into Ages, each Age lasting about 50 years and one central person is associated with each age. Thus 500-450 B.C. is the Age of Plato, followed by the Ages of Aristotle, Euclid, Archimedes and so forth. From 750 A.D. (c.e.) to 1100 A.D. (c.e.) we find an unbroken succession of Islamic scientists, the Ages of Jabir, Khwarizmi, Razi, Masudi, Abu'l - Wafa, Biruni and Omar Khayam. Strikingly, for 350 years there are no names outside the world of Islam. Arabs, Turks, Afghans, Persians and converts from Judaism and

Christianity dominated the world stage of science in the fields of chemistry, mathematics, medicine, geography, physics and astronomy. According to Sarton, it was only after 1100 A.D. (c.e.) that Western names begin to appear but even then and for 250 years more they share the Ages of scientific honor with Muslims like Ibn Rushd, Nasir-ud-din Tusi, and Ibn Nafis.

An important aspect of the Islamic Age of scientific prominence was the reverence in which learning and science was held. This patronage of science by the dominant elites was of course the major and perhaps only source of funding in the absence of institutional arrangement. Quite logically when the socio-political domination of the world by Islam began to fade in the middle ages, patronage also began to dissipate.

In this brief account, I cannot do justice to all scientific achievements of Islamic science and accordingly will mention only a few centered around what Abdus Salam has called The Golden Age of Science in Islam which laid the foundations of the experimental method.⁽³⁾ This period straddles the year 1000 A.D. (c.e.) between Ibn-i-Sina (Avicenna) the last of the medievalists and his contemporaries, the first of the moderns, Ibn-al-Haitham and Al-Biruni.

Ibn-al-Haitham known as Alhazen in the West was one of the greatest physicists of all time and an experimentalist of the first order in the science of optics. When he claimed that "a ray of light in passing through a medium takes the path which is easier and quicker" he anticipated Fermat's Principle of Least Time by many centuries. He described the law of inertia, later to become Newton's 1st Law of Motion. Refraction was described in mechanical terms by considering the movement of "particles of light" as they passed through the surface of separation between two media, in accordance with the rectangle law of force — an approach later rediscovered and elaborated by Newton. Roger Bacon's *Opus Majus* Part V is essentially a copy of Ibn-al-Haitham's *Optics*. It is not surprising therefore that we hear of Bacon's admonition to his own contemporaries in the West that he "never wearied of declaring that a knowledge of Arabic and of Arabic science was the only way to true knowledge."

Al-Biruni (973-1048 A.D. (c.e.)) was an empirical scientist like Ibn-al-Haitham who worked in Afghanistan. He anticipated Galileo by six centuries in his discovery of the so-called Galilean invariance of the laws of nature — perhaps the most liberating statement in science "that the same Laws of Physics apply here on earth as they do the stars and planets in the heavens."

Unquestionably Western Science is a Greco-Islamic legacy. Those Western scholars who allege that Islamic science simply followed Greek theoretical traditions blindly without adding to the scientific method are simply ignorant of the historical evidence to the contrary. Islamic scientists demonstrated what we know now to be the only way to do intense scientific

work. First learn and build your knowledge on what is available ("reading the literature"), then examine your doubts about what you have learned ("developing hypotheses") and finally the critical step of new observations and experiments of your own. This critical step in the history of science came early in Islamic science and its clearest exponents were Ibn-al-Haitham and Al-Biruni. (3)

Here is Al-Biruni on Aristotle:

"The trouble with most people is their extravagance in respect of Aristotle's opinions; they believe that there is no possibility of mistakes in his views, though they know that he was only theorizing to the best of his capacity and never claimed to be God's protected and never said he was immune from mistakes."

And here is Al-Biruni denouncing medieval superstition:

"People say that on the 6th of January there is an hour during which all salt water of the earth gets sweet. Since all the qualities occurring in the water depend exclusively upon the nature of the soil... These qualities are of stable nature... Therefore this statement... is entirely unfounded. *Continual and leisurely experimentation will show to anyone the futility of this assertion.*"

And finally, Al-Biruni on geology and his insistence on *observation and logical deduction*.

"...But if you see the soil of India with your own eyes and meditate on its nature, if you consider the rounded stones found in earth however deeply you dig, stones that are huge near the mountains and where the rivers have violent currents, stones that are of smaller size at a greater distance from the mountains and where the streams flow more slowly, stones that appear pulverized in the shape of sand where the streams begin to stagnate near the mouths and near the sea — if you consider all this you can scarcely help thinking that India was once a sea, which by degrees has been filled up by the alluvium of the streams."

In the words of the French scholar Briffault, "The Greeks systematized, generalized and theorized, but the patient ways of investigation, the accumulation of positive knowledge, the minute methods of science, detailed and prolonged observation and experimental enquiry were altogether alien to the Greek temperament... What we call science arose in Europe as a result of a new spirit of enquiry, of new methods of investigation, of the method of experimentation, observation, measurement and of

the development of Mathematics in form unknown to the Greeks. That spirit and those methods were introduced into the European mold by the Arabs.... Modern Science is the most momentous contribution of Islamic civilization." (8)

George Sarton puts these thoughts of Briffault in another way, "the main, as well as the least obvious, achievement of the middle ages was the creation of the experimental spirit and this was primarily due to the Muslims down the 12th Century." (7)

The Golden Age of medical science in the Islamic world began somewhat earlier. The first translator and writer of independent medical works in Arabic was a Christian Ibn Masawayh (known as Mesue Senior in the West) and after him his student Hunayn ibn Ishay. Hunayn translated not only the works of Hippocrates and Galen into Arabic but also an entire medical curriculum, the Alexandrian summaries. He also wrote the first systematic treatises on Diseases of the Eye. These Christian Arab pioneers were followed by the first notable Muslim physician in the first half of the 3rd/9th century, Al-Tabari, an Iranian convert to Islam. He wrote the first systematic Islamic work on medicine, the *FIRDAWS AL-HIKMAH*; this included discussion of all branches of medicine as well as anatomy and a special section on Indian medicine. On this foundation built by Al-Tabari and Hunayn, the golden age of Islamic medicine began with the work of the person we honor today in this lecture; Muhammad ibn Zakariyya al-Razi, probably the greatest of Muslim physicians. His experimental and clinical contributions were catalogued by al-Biruni who listed 184 works, the most important of which was the encyclopedic *al-Hawi* (Liber Continens) much prized in the West. His most famous work known in the West was on smallpox and measles (*Kitab al-jadari wa'l-hasbah*). Following Al-Razi, another Iranian dominated internal medicine in the Eastern part of the Islamic world: Al-Majusi known in the west as Haly Abbas. His contemporary in Muslim Spain was al-Zahrawi (Albucasis) probably the greatest surgeon of the Golden age of Islamic Medical Science, whose *Kitab-al-Tasrif* or *Concessio* in Latin contained a section on surgical instrumentation and techniques. His works were widely disseminated in the West due to the Latin translation by Gerard of Cremona and interest in this work survived into the modern period with a 1778 Oxford edition of the Arabic text with Latin translation. (6)

Space does not allow further discussion of other notable medical scientists such as the "prince of physicians" Abu Ali ibn Sina (Avicenna) who was born in Bukhara and did most of his work in Persia; ibn Nafis, the discoverer of the pulmonary circulation and the real predecessor of William Harvey; al-Afkani, the Egyptian who wrote the first book on first aid, "The Refuge of the Intelligent during the Absence of the Physician" and ibn Rushd (Averroes) the most celebrated philosopher and physician of

Andalusia who wrote the *Kitab-al-Kulliyat* (the book of General Principles — Colliget in Latin).

The Jewish physician and philosopher Abu Imran Musa ibn Maymun (Maimonides) was a student of both ibn Rushd and Ibn Tufayl. Accomplished in both medicine and philosophy, he became physician to Salah-al-Din Ayubi (SALADIN) and his family; his medical works include "The Book of Aphorisms" (*Kitab al-fusul*) and the "Regimen of Health", a book on Hygiene dedicated to the son of Saladin.

The causes of the decline and interruption of the modern spirit of science which first dawned within the Islamic civilization remains unknown. The works of al-Biruni and Ibn-al-Haitham, of al-Razi and ibn-Sina did not directly lead to a continuous and permanent change in the direction of human sciences. Within a century or so after these men lived and worked, creation of first class science petered out and virtually came to a halt. About five centuries had to pass before the torch lit by scientists working in the Islamic world was rekindled and carried forward by Galileo, Copernicus, William Harvey, Leeuwenhook, Isaac Newton (who was born in the same year in which Galileo died — 1642) and their contemporaries. It is tragic indeed that it has taken almost another 500 years for the Islamic world to realize that without modern science there is no possibility of survival in the modern world.

THE DECLINE OF SCIENCE IN ISLAM

There have been many studies and books written on the "Glory that was Islam" but very little on why that glorious civilization did not succeed in establishing what it first developed, a mature system for doing creative science and educating new scientists. A few Western scholars have attempted to address this problem, notably Marshall Hodgson in his magisterial work, "The Venture of Islam" (1) and Bernard Lewis in his book, "The Muslim Discovery of Europe". (9) (I have not been able to find any definitive book by a Muslim on this subject, but my interest was aroused in this matter by an excellent analysis by Professor Abdus Salam; the first and only Nobel laureate (in Physics) in the Muslim world. He asks the question: "why did creative science die out in Islam?") Salam's analysis leads him to attribute the demise of living science within the Islamic commonwealth which began around 1100 A.D. (c.e) and essentially completed by 1350 A.D. (c.e.) to internal rather than external causes. We will examine the latter first. By external causes we usually understand such factors as the Mongol invasion, the Crusades and the unfortunate and too frequent recurrences of tribal and internecine warfare amongst Muslims themselves who often placed tribal and national loyalties above belief in Islam. This unfortunate tendency continues to this day. More recently we can add the long

succession of military political defeats for Dar-al-Islam symbolized by such episodes as the conquest of Egypt by Napoleon, of the Mughal Empire by the British, the destruction of the Ottoman Empire and the subsequent Balkanisation of the Arabian heartlands and the Middle East by the European powers. The latter set of events are particularly intriguing in helping us examine the paradox of the decline of Science in the Muslim world, occurring almost at the same time as the geo-political power of Muslim states was becoming more significant.

During the sixteenth century in spite of the decline of creative science, geo-politically, the Muslim world constituted the most rapidly expanding force in world affairs. Not only were the Ottoman Turks pushing westward into Europe, but the Persians were enjoying a resurgence of power and high culture under Ismail I (1500-1624) and Abbas I (1587-1629). A chain of strong Muslim Khanates controlled the fabled Silk Road via Kashgar and Turfan to China very much in the way that African Islamic states such as Bornu, Sokoto, and Timbuktu controlled the northern and central African trade. Hindu empires in Indonesia and India were overthrown by Muslim forces early in the sixteenth century. Under Akbar the Great (1556-1605), the Mughal Empire stretched from Baluchistan in the west to Bengal in the east. People converted to Islam in Africa and Asia in large numbers, far outstripping the proselytizing efforts of Christian missions in the same areas. The Ottoman Empire had conquered Hungary in the west, besieged Vienna repeatedly and established a unity of official faith, culture and language over an area greater than the Roman Empire. Its cities were large, well illuminated and with extensive sewage systems. In spite of continuing dominance in the early sixteenth century in mathematics, cartography, medicine and the technologies of mills, gun casting, lighthouses and horse breeding, by the second half of that century, the Ottoman Turks began to falter, turn inward and lose their hold on power. In a superb historical account, Paul Kennedy has placed this collapse in the context of how all great powers have risen and fallen since 1500 to the present day. His emphasizes is placed on the geo-political, economic, and military factors, particularly the latter. He blames strategic over-extension or "imperial overstretch," comparing the collapse of the Turkish, Spanish and British empires to a similar situation in the U.S.A. today, wherein the sum total of an empire's global interests and obligations exceeds its capacity to defend them simultaneously. (10)

The titular Caliph of all Islam was the Sultan of the Ottoman Empire, who was also titled "Defender of the Holy Places" (Mecca, Medina and Jerusalem). In the west his forces maintained a large army in central Europe, an expensive navy in the mediterranean, troops in North Africa, the Aegean, Cyprus and The Red Sea, with constant reinforcements needed to retain the Crimea against the rising Russian power. The official Sunni prac-

tice and teaching of the Ottoman Empire was now challenged by a disastrous religious split between the Shia branch of Islam based in Iraq and later in Persia under Abbas the Great. Just as France had collaborated with the "infidel Turk" against the Holy Roman Empire, the Persians now allied themselves with the "infidel" Europeans against the largest Muslim power in the world. The fact that after 1566 a series of thirteen thoroughly incompetent Sultans ruled the Empire was certainly an aggravating factor. Kennedy suggests an important point which applies very well to the thesis I am developing. He says, "External enemies and personal failings do not however provide the full explanation." He then goes on to cite the defects of being too highly centralized, despotic and severely orthodox towards any initiative and dissent. The fierce repression of the Shia religious challenge (instead of any attempt at discussion and consensus building) "reflected and anticipated a hardening of official attitudes toward all forms of free thought." Printing presses were forbidden so that "dangerous" opinions would not spread. Imports of western goods were desired but exports were forbidden. Trade guilds received official support to check innovation and prevent the rise of "capitalist" producers. Contemptuous of European ideas and practices, the Turks refused to adopt newer methods to control plagues — consequently, the people suffered more severe epidemics. "In one truly amazing fit of obscurantism, a force of the elite Jannisaries destroyed a state observatory in 1580 alleging that it had caused a plague!"

Exactly analogous attitudes and practices were developing in that other center of Muslim power, the Mughal Empire. A conquering Muslim elite controlled a mass of poverty-stricken peasants, mostly Hindus. In spite of a sophisticated banking and credit system and the availability of a strong commercial community in Hindu business families, the Mughal rulers (with exception of perhaps Akbar the Great) could not overcome certain indigenous retarding factors. The Hindu cast system, their religious taboos against modernization and the influence of obscurantist Brahmin priests over local Hindu Rulers was coupled with marked distortions in the nature of Mughal rule. "The brilliant courts were centers of conspicuous consumption on a scale which the Sun King of Versailles might have thought excessive. Thousands of servants and courtiers, extravagant clothes, jewels, harems and menageries, vast arrays of body guards could be paid for only by the creation of a systematic plunder machine. Tax collectors, required to produce fixed sums for their masters preyed mercilessly upon peasant and merchant alike; whatever the state of the harvest or trade the money had to come in. There being no constitutional or other checks — apart from rebellion — upon such depredations, it was not surprising that taxation was known as 'eating'. For this colossal annual tribute, the population received next to nothing. There was little improvement in communications and no machinery for assistance in the event of famine, flood and

plague — which were of course fairly regular occurrences.” (10)

Thus the decline of the Mughal Empire which is technically attributed to the loss of control of the the Afghans in the North, the Marathas in the South and finally the East India Company of Great Britain, was much more due to internal factors than external threats. Ironically the greatest expansion of Mughal power in the Indian sub-continent under Aurangzeb was also coupled with a significant hardening of rigid orthodoxy and intolerance for deviations in the official interpretation of Islamic Law and teaching. It is no wonder that the collapse of the Mughal empire developed most rapidly after the death of Aurangzeb. Apart from ordering wholesale destruction of Hindu temples, Aurangzeb by his own confession, had neglected that side of the Shariah that called for protection and justice for the peasantry. (10,11)

Let us now examine more closely some of the *internal* factors which facilitated the decline of science in Islam. The turn of the eleventh to twelfth century was a time of intense politically motivated sectarian religious strife. Imam Ghazali in his “The Revival of Religious Learning,” insisted that certain sciences were necessary (FAD-AL-KIFAYA) for the preservation of Islamic society, e.g. mathematics and medical science. In another of his books, *Al-Munqidh min ad-Dalal*, he could not have been clearer “A grievous crime indeed against religion has been committed by a man who imagines that Islam is defended by the denial of the mathematical sciences, seeing that there is nothing in the revealed truth opposed to these sciences by way either of negation or affirmation, or nothing in these sciences opposed to the truth of religion.” As Abdus Salam has said “Imam Ghazali was fighting a losing battle.” **What appeared to develop from the 12th Century onward was an increasing lack of tolerance (*taqlid*) for innovation (*ijtihad*).** Although technically *ijtihad* stands for individual enquiry to establish the ruling of the Shari’ah upon a given point by a qualified person (*muftahid*), I am using this term in a wider sense of innovative interpretation. It should also be noted that the Sunni branch of Islam had considered *ijtihad* permissible only on points not already decided by recognized authorities such as Abu Hanifah (699-767 A.D. (c.e.) and Ahmad ibn Hanbal (780-855 A.D. (c.e.)). On points already so decided, they required *taqlid* i.e., adherence to the orthodox view. It is in this sense of demanding adherence and preventing innovation that this term (*taqlid*) is being used. It should also be noted that the Shia branch of Islam permitted full *ijtihad*, but only to their great scholars and not the ordinary Muslim.

Perhaps the most telling example of the depressing combination of apathy towards the continuation of creative science and a smug complacency towards the rigid orthodox religious view is found in a quotation from a surprising source. Ibn Khaldun (1372-1406 A.D. (c.e.)), was one of the greatest of social historians as well as one of the brightest intellects for any

time and yet he writes in his famous Muqaddimah:

"We have heard, of late, that in the land of the Franks, and on the northern shores of the Mediterranean, there is a great cultivation of philosophical sciences. They are said to be studied there again, and to be taught in numerous classes. Existing systematic expositions of them are said to be comprehensive, the people who know them numerous, and the students of them very many... Allah knows better what exists there... But it is clear that the problems of physics are of no importance for us in our religious affairs. Therefore, we must leave them alone." (12)

As Abdus Salam has emphasized in referring to this example "isolation in the sciences and the veneration of authority it engenders, spells intellectual death." (3)

Unfortunately, this lack of toleration for innovation and confusion of scientific work with religious practice continued right through the history of the great Islamic empires. The Osmanli Turks, the Iranian Safavis and Indian Mughals, with a few notable exceptions continued the scientific decline even while importing European technology. William Eaton, British Consul to Istanbul in the year 1800 writes concerning the Turks as follows: "The man of general science is unknown. No one has the least idea of navigation and the use of the magnet... They like to trade with those who bring to them useful and valuable articles, without the labor of manufacturing." (13) This indolent attitude towards science and technology is not fully overcome even today. When one examines the utilization of the G.N.P. of Islamic nations today and tries to ascertain how much is devoted to establishment of scientific institutions wherein *science transfer* from the West is emphasized as well as *technology transfer*, one finds only few examples of which to be proud. The number of scientists from Islamic countries is very small, 1/100 to 1/10 in size, in scientific resources and in scientific creativity, compared to international norms. (14)

Abdus Salam has noted in the paper referenced above that the confusion in Muslim thought about science and its relation to religion today may well be a legacy of the battles of yesteryear "when the so called 'rational philosophers' with their irrational and dogmatic faith in cosmological doctrines inherited from Aristotle found difficulties in reconciling these with their faith." (14)

Unfortunately this confusion continues unabated to this day. At a recent conference on "Scientific Miracles of Qur'an and Sunnah" held in Islamabad many papers were read purporting to establish that every scientific phenomenon now known was anticipated 1400 years ago. The conclusions drawn were remarkable, e.g. Dr. Muhammad Muttalib of Al-Azhar University stated that mountains have pegs which root them into the earth, in the absence of which the earth rotation would cause the mountains to disintegrate; an opinion which obviously is innocent of any knowledge of

gravity and the fact that it is considerably stronger than centrifugal force. An earlier conference of this sort contained a report by Dr. M. Arshad Ali Beg of the PCSIR laboratories entitled "Qur'an and Scientific Interpretation of Munafaqat." In this Dr. Beg develops an equation analogous to that describing the force between electrical charges by which he can calculate the degree of munafaqat in any society. On a scale of 0-100, his estimate for munafaqat for Western Society equalled 22 and for Spain and Portugal equalled 14. Disappointingly, no figures were given for munafaqat in societies closer to Dr. Beg's own country. (15)

The confusion exists because such person do not have a clear idea of what science is and how religion relates to it. Modern science seeks rational understanding of the physical universe by observation, inference and constructs knowledge on the objective basis of sense experience and is essentially quantitative knowledge. Scientific theories on the other hand are never perfect and no theory is acceptable unless it makes a sufficient number of predictions which if proven wrong will falsify that theory! This effort is completely secular and does not appeal to divine authority for verification of scientific facts but the existence of such authority is neither affirmed nor denied by science. Some scientists are atheists or agnostics; others are deeply religious and continually in wonder at the order, precision and beauty of the universe and all things within it. Abdus Salam, a devout Muslim quoted the Qur'an repeatedly when he accepted the Nobel Prize in Physics in 1979, a prize he shared with Steven Weinberg who is an avowed atheist.

We may now understand how it is possible for a deeply religious Muslim, who does not do scientific work or realize what modern science is all about, to indeed become confused and try to create a new "Islamic Science." He may be genuinely concerned that practitioners of modern science inevitably become "rationalists" (Modern Mutazalites) which in turn will lead to *shirk* and apostasy. On the other hand there may well be some who are truly obscurantists and see the new "Islamic Science" as a proper reaction to modern science thus creating a false dichotomy of a religious science and an irreligious science. In truth they are encouraging the development of a pseudoscience. How else can one assess the contribution to Islam of Sheikh Ibn-el Baz, rector of Mecca University, who threatens with the *fatwa* of *takfir* all who disagree with his belief that the earth is stationary and the sun moves around it? How is Islam served by that well known Pakistani scientist who (apparently seriously) advocates using fiery jinns as fuel and hence solving Pakistan's energy crisis?

Such confusions of thought, well described in analytic philosophy as "category mistakes" are not only recent and certainly not unique to Muslims. The Christian theologians of the middle ages had similar arguments with bitter denunciations and persecutions amongst themselves.

Their questions were of the type: Does God note the *primum mobile* directly as an efficient cause or only as a final or ultimate cause? Do angels experience fatigue? Does celestial matter have inherent qualities like terrestrial matter? When Galileo first tried to classify such questions into those that properly belonged in Physics and then sought to find answers only to those questions by physical experiments, he was persecuted by the Catholic Church. Three hundred and fifty years later, however, we read that at a special ceremony for Nobel Prize Winners at the Vatican on May 9th, 1983, His Holiness the Pope declared "The Church's experience in the Galileo affair and after it, has led to a more mature attitude. The Church itself learns by experience and reflection and she now understands better the meaning that must be given to freedom of research...it is through research that one attains to Truth.... This is why the Church is convinced that there can be no real contradiction between science and faith. However, it is only through humble and assiduous study that the Church learns to dissociate the essential of the faith from the scientific systems of a given age, especially when culturally influenced reading of the Bible seemed to be linked to an obligatory cosmogony."(3)

Evolution of scientific understanding in relation to religious thought in Islam, analogous to that described above in Catholic Christianity, is certainly ongoing now and possible for all educated Muslims. The greatest potential asset of Islam is the frank sense of history that from the start has been a dominant fact in its discussions (even though some modernizing Muslims have displayed a romantic disregard of historical facts). Al-Shafi continued in his own work the example set by the Holy Prophet's life when he insisted on understanding the Qur'an quite concretely in its historical interaction with the life of the Prophet and his community. Although historical accuracy has not always been maintained, no Islamic scholar has ever denied the principle that historical accuracy was the foundation of all religious knowledge. Hodgson has suggested that it may be that Muslims "dare not admit that the historical Islam which is at the focus of their loyalties may be less perfect than the God with whom, in practice, they tend to identify. But if there are Muslims whose confidence in God Himself is strong enough so that they dare risk everything, even community prestige or solidarity, for the sake of truth, then for such Muslims, facing historical realities and coming to terms with even the most painful of them is encouraged by the Islamic tradition itself."

This sincere effort is needed if we are to reconcile within ourselves as Muslims the ability to work as scientists and continue to feel that our efforts' are an essential part of a cosmic plan. The key element here is the subjective point of view either reconciled with, or in creative tension with, an objective point of view, what Thomas Nagel has called "the view from nowhere." (16)

The moral crisis of the modern world is that preventable ignorance, hunger, disease and rampant human misery in an exploding world population coexists with highly sophisticated scientific techniques and knowledge which can ameliorate these problems. Thoughtful and well meaning scientists such as Roger Sperry and Jacque Monod hope to develop a value system for the modern world based on the ethics of science itself. This "scientific" fallacy is in a sense the opposite of the "religious" fallacy of an "Islamic" science, i.e., an analogous category mistake. In a fascinating review of modern physics, Paul Davis has shown how recent findings in science suggest that a predisposition to selforganization and increasing complexity is inherent within the laws of nature and that, in principle, science can explain the existence of complexity and organization at all levels including human consciousness, though only by embracing "higher level" laws. Davis admits that one view of these findings would be to deny a God or purpose in this creative universe; but "he does not see it that way" — he sees the same facts and finds "powerful evidence that" something is going on" behind it all, i.e., that there is a purpose and meaning to the universe. (17) This is exactly the stance of any scientist who also believes in God. In my own work in the field of neuroscience I have developed a theory for the role of emotions in mental processes which explains how our need to know and to order information is regulated by our deeply felt beliefs. This fundamental mechanism of the mind (which is partly reducible to the physics and chemistry of the brain) is unique on earth for human brains and very much a function of how we are designed (our genetic inheritance) as modulated and developed by environmental interaction. The theory shows how subjectivity is prior to and regulatory of objectivity with the latter's feedback expanding the range of subjectivity. (18) Thus, when we understand the inner dimensions of the message of Islam as well as ourselves, we begin to understand that it is indeed possible to comprehend how all our actions can be, to a great extent self determined and yet in the service of God. Albert Einstein once said, "Science is a continual flight from wonder." I define the process in more detail as a movement from subjective wonder, through rational objective understanding and back again to wonder at the beauty and complexity of it all. The more we know the more we seek to know. "Inna' Llahu jamilu, yuhibbu 'l-jamal" (Verily God is beautiful and He loves beauty). Thus when we say "la illah ha il'lallah" (There is no God but God) we are affirming our faith in Al-Tawhid and when we say "Muhammadun Rusul Allah" (Muhammad is the messenger of God) we are affirming our belief in Muhammad as al-insan-al-kamil and our desire to grow in this direction. A desire which can only be fulfilled with greater knowledge. We should help science grow in the Islamic world, help the institutions grow and young scientists develop and discover for themselves the power and limitations of Science. Fear not for their spiritual values. The

deeper one's knowledge of science grows, the more one realizes how narrow a path it treads in the vast mysteries of space and time. The need to know more is never satisfied and spiritual growth inevitably follows with greater knowledge once the seeker realizes the limits of objectivity. There is a wonderful story about Al Biruni told by a contemporary: —

"I had heard Al-Biruni was dying. I hurried to his house for a last look: one could see that he would not survive long. When they told him of my coming, he opened his eyes and said: Are you so and so? I said: yes. He said: I am told you know the resolution of a knotty problem in the laws of inheritance of Islam. And he alluded to a well known puzzle. I said: Abu Raihan, at this time? And Al- Biruni replied: "Don't you think it is better that I should die knowing rather than ignorant?" With sorrow in my head I told him what I knew. Taking my leave I had not yet crossed the portals of his house when the cry arose from inside: Al Biruni is dead."

In conclusion I would like to quote a verse from the Qur'an which best captures the sense of wonder which is so fundamental in both science and religion as well as suggests their relation to each other.

"Though all the trees on earth were pens
And the Sea was ink.
Seven Seas, after, to replenish it,
Yet would the words of my Lord
be never spent,
Thy Lord is Mighty and All Wise." (Qur'an 31:27)

"Allah is the Light of the heavens and the earth. The similitude of His light is as a niche wherein is a lamp. The lamp is in a glass. The glass is as it were a shining star. This lamp is kindled from a blessed tree, an olive neither of the East nor of the West, whose oil would almost glow forth of itself though no fire reached it. Light upon Light. Allah guideth unto His light whom He will. And Allah speaketh to man in allegories for Allah is Knower of all things." (Qur'an 24:35).

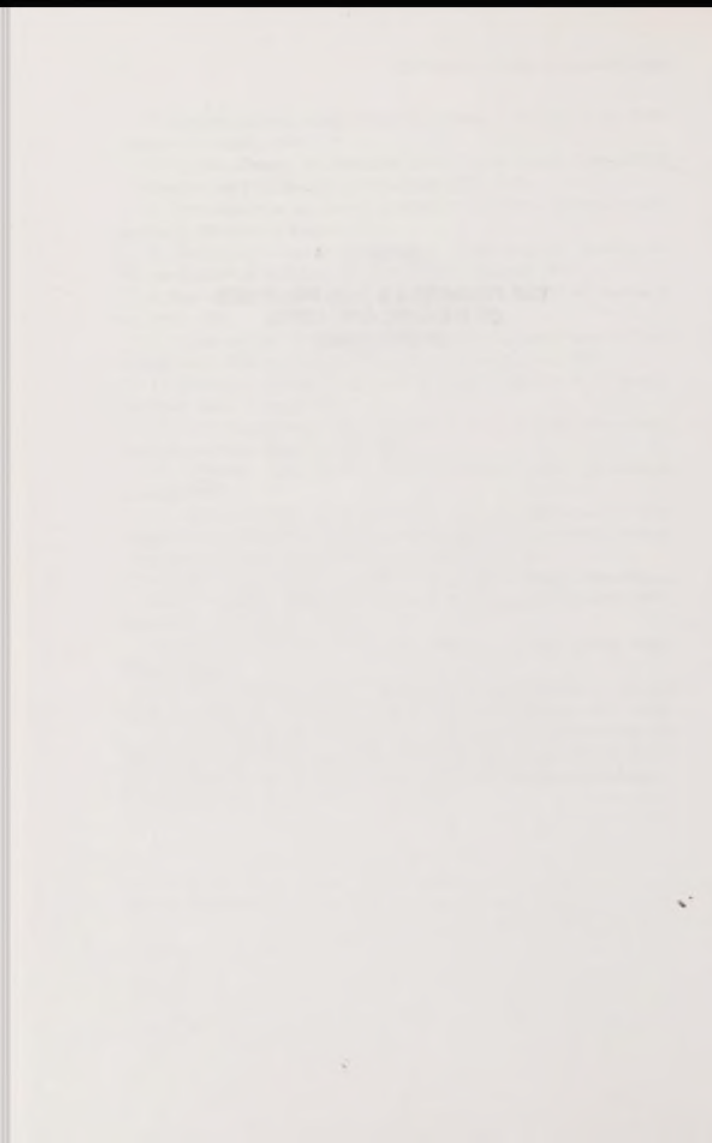
BIBLIOGRAPHY

1. *The Venture of Islam, Volumes I, II, III*, Marshall G. S. Hodgson., University of Chicago Press, 1974.
2. *Chance and Necessity*, Jaques Monod., Collins, 1972.
3. *Islam and Science. Concordance or Conflict?* Invited Address delivered by Abdus Salam to a meeting on "Islam and the West", UNESCO House, Paris. April 27, 1984.
4. *Science and Civilization in Islam*, Syed Hosein Nasr., Cambridge,(USA), 1968.

5. Understanding Islam, Frijthof Schuon (Translated by D.M. Matheson., London, 1961.
6. Islamic science: An Illustrated Study, Syyed Hosein Nasr., World of Islam Festival Publishing Co., Westerham. U.K., 1976.
7. *Introduction to the History of Science, 3 Volumes*, George sarton., Baltimore, Williams & Walkins, 1945.
8. *Making of Humanity*, M. Briffault. quoted by M. Iqbal in the "Reconstruction on Religious Thought in Islam." Lahore, 1971.
9. The Muslim Discovery of Europe, Bernard Lewis., W.W. Norton & Co., N.Y., 1982.
10. Rise & Fall of Great Powers: Economic Change and Military Conflict from 1500 to 2000, paul Kennedy., Randam House, 1987.
11. History of Muslim Civilization in India & Pakistan, S. M. Ikram., Star Book Depot, Lahore, 1962.
12. *The Muqqadimah*, Ibn Khaldun (Translated by R. Rosenthal)., Routledge & Kegan Paul, London, 1958.
13. *A Survey of the Turkish Empire*, William Eaton., 4th Edition, London, 1809.
14. *The Gulf University and the Arab-Islamic Commonwealth*, Paper presented by Professor Abdus Salam at the Symposium on "Future Outlook of the Arabian Gulf University", May 11, 1983, Bahrain.
15. *The Scientific Miracles Conference*, Perrez Amirali Hoodbhoy, Professor of Physics., Quaid-i-Azam University, Islamabad. VIEWPOINT., November 12, 1987. pp. 9-10.
16. *The View from Nowhere*, Thomas Nagel., Oxford University Press, Oxford, 1986.
17. *The Cosmic Blueprint: New Discoveries in Nature's Creative Ability to Order the Universe*, Paul Davies., Simon & Schuster, N.Y., 1988.
18. The Role of Emotions in the Processing of Information by the Brain, Ayub K. Ommaya, M.D., Keynote Paper presented at the Smithsonian Resident Associate Program on "Art, Science & Religion", Washington, D.C., 1987.

Section B

**THE PRINCIPLES AND PRACTICE
OF ISLAMIC CONCEPTS
OF MEDICINE**



THE ROLE OF A MUSLIM DOCTOR

Mahmoud Abu-Saud, Ph.D.

Disease and Cure

Humans crave for "Perfect health." They know that they can never attain this state of perfection because they cannot conceive what is "perfect". Most should therefore be reasonably satisfied with relative "good health", where the individual would be living without imminent suffering or pain. As living organisms, humans are subject to genetic and environmental influences that affect the functioning of their organs. Any negative effect would cause a disease.

The force of life inexorably urges living organisms to resist disease which constitutes by definition an obstruction to the fulfillment of the ultimate objective of the ailing organism. Not only do humans who live for some purpose in life, but one dare say every particle has a role and is commissioned to undertake it to the best of its ability. This innate tendency in all organisms to function in accordance with their respective eternal laws ministering their roles and missions is a part of what the Qur'an terms as "Tasbeeh".

"The seven heavens and the earth, and all beings therein, declare His Glory: There is not a thing but celebrates His praise, and yet you understand not how they declare His glory. Verily He is oft-forgiving." (Qur'an 27:44)

Both words "glorifying" and "praising" in the above verse have been used by translators to imply "Tasbeeh", but they can mean the conformity with the laws enacted by Allah to administer the ideal relationships among all beings in the course of their function and performance. When there is any disturbance or deviation from the inherent discipline of Tasbeeh, then there is a disease. In humans, such a disease can be pure moral (psychological), pure pathological, or moral-cum-pathological. When a person goes

astray in his behavioral conduct, or when he contracts a virus infection, or where the cholesterol in his blood increases to the extent that affects his meditative faculties and behavior, this person is accordingly considered sick. To cure him, an appropriate course of treatment must be followed. The person who is qualified to judge whether a person is suffering from a "disease" as such, and who assumes the functions of healing is called a medical doctor.

To help understand the role of the Muslim doctor, let us have a look at the texts in the Qur'an and Hadith relating to the subject. God talks in the Qur'an about moral disease and cure in several suras (chapters):

"O mankind! There hath come to you a direction from your Lord and a healing for the (disease) in your hearts, - and for those who believe, a guidance and a mercy" (10:57).

The "direction" in this verse is to the Qur'an itself; it is considered a sure cure to any moral or psychological disease that may afflict true believers.

"It (Qur'an) is a guide and a healing to those who believe" (41:44).

There is no doubt that genuine belief in God can be the best cure for most of our psychological disturbances. It brings peace to our hearts as we beckon to our Creator and resign in Him.

"But He guideth to Himself those who turn to Him in patience. — Those who believe, and whose hearts find peace and satisfaction in the remembrance of God: for without doubt in the remembrance of God do hearts find satisfaction and peace" (13:27-28).

Moral disease has been frequently expressed as disease in the heart. For instance, depicting the psychological picture of the Hypocrites (Munafiqeen) God says:

"In their hearts there is a disease; and God has increased their disease; and grievous is the penalty they (incur), because they are false (to themselves)" (2:10).

Transgressors, unbelievers and ill-intentioned individuals suffer from a moral weakness — a disease in their hearts. This term has been repeated about thirteen times in the Qur'an.

From the physical point of view, there are many verses that mention the ill and the patient, giving them respite from some commissioned obligations and prescriptions. For instance, the ill are allowed not to keep the fasting during Ramadan (2:184), not to observe the usual ablution (4:43), to cut their hair during the pilgrimage (2:196), and not to respond to the call of Jihad (9:91), etc. In general, the ailing person is treated as a special case and is given the chance for recovery and is always given special treatment.

It is granted that Allah is the ultimate healer. Ibrahim (PBUH) arguing with his people about the omnipotence of Allah said,

"... (Allah) is He who created me, and it is He who guides me, who gives me food and drink, and when I am ill, He cures me..." (26:80).

Nevertheless, the Qur'an mentions, for instance, a healing potential in honey produced by bees:

"... there issues from within their bodies a drink of varying colors, wherein is healing for men..." (26:69).

The Hadith, as usual, gives us striking revealing facts concerning disease and cure. Our Prophet (PBUH) informed us that the general rule is that there is a cure to every disease, whether we are aware of it or not. We know at present that our cells produce antibodies to fend against the agents of disease: the viruses and virulent bacteria. Homeopathic philosophy is based on helping the body to overcome the disease by giving the sick very small doses of drugs that would stimulate the same symptoms in a healthy person if given in large doses. In simple words, the well established Hadith narrated on the authority of Ibn Maso'ud "God has not inflicted a disease without prescribing a cure to it, known to whoever knows it, and unknown to whoever does not know it." (cited by Ahmad, cf *Nayl-al-Awtar*, V.9, p. 89) is a confirmation of the natural law of auto-resistance or self defense. It indicates as well the necessity for discovering cures to our diseases. He (PBUH) said - on the authority of Usama Ibn Shuraik - when a Bedouin asked him whether he should seek treatment: "Yes, servants of God seek treatment; God has not set a disease without setting a cure to it, known to whoever knows it and unknown to whoever does not know it" (cited by Ibn Majah, Tirmidhi and Abu-Dawood). And again, on the authority of Abu-Huraira, the Prophet (PBUH) said, "God has not sent any disease without sending a cure to it" (cited by Ahmad, Bukhari and Ibn Majah).

The Muslim Patient

Every human being is bound to feel ill sometime and somehow. A Muslim does not panic when afflicted with any sickness because his belief in the mercy of God, his faith in destiny and his faith enjoining forbearance and patience give him strength to stand fast and endure his ordeal. However, he is supposed to seek treatment in response to the Prophet's (PBUH) order. By accepting the Prophet's (PBUH) statement that there is a cure to every disease, the Muslim patient builds up a strong hopeful attitude that helps him and his doctor to resist the disease and overcome it.

The Muslim Doctor

The Muslim doctor shares with the Muslim patient the two main char-

acteristics: the faith in God and destiny, and the conviction that there is a cure for every disease. But the doctor must have something more; he is supposed to know, or at least try to know, the proper diagnosis and the proper cure. He must be aware of his mission or commission entrusted to him in his capacity as the agent of healing. Being an agent, he believes that the act of healing is not entirely his, but it depends on God's will. It seems to me that medical doctors are more aware than others of the divine power and God's will. They meet every day with cases where destiny plays the major part, and they encounter the most unexpected results. Yasir narrates that the Prophet (PBUH) said: "For each disease there is a cure; and when the (right) treatment is given, the disease is cured by the Will of Allah" (Ahmad and Muslim).

The art of healing, which is called the medical profession in modern language, has been highly respected all through the ages. For a long period in human history this art was closely correlated with religious leadership and quite often confluent with magic and miracles. Since the advent of Islam 1400 years ago, medicine has become a science subject of human intelligence and discovery. Nevertheless, the medical doctor has persistently captured the appreciation and respect of his contemporaries, especially as medicine was usually associated with other philosophical and social knowledge. In fact this close marriage between philosophy and medicine distinguished the medical history of Islam. The gist here is that a doctor's prognosis included the spiritual, psychological and social sides of the patient over and above the pathological aspects. I earnestly believe that in an Islamic state, all Muslim doctors in course of their everyday practice, and when dealing with Muslim patients in particular, should keep this traditional prognostic attitude in mind. I am sure, if they do they will never regret the act.

But what is it that makes a Muslim doctor different from other non-Muslim doctors? From the technological and scientific points of view, all doctors fall in one category. However, when it comes to practice, the Muslim doctor finds himself bound by particular professional ethics plus his Islamic directives issuing from his belief. In fact, the Muslim doctor - and I mean by this that doctor who tries to live his Islam by following its teachings all through - is expected to behave differently on some occasions and to meet greater responsibilities compared to other non-Muslim doctors.

1. *The Public Responsibility:* A Muslim doctor is supposed to belong to a Muslim community where there is some common cause, common feelings and mutual solidarity, "Believers are brethren" (49:10). God also says:

"And hold fast all of you together to the Rope of Allah, and be not divided among yourselves; and remember Allah's favor on you, for you were enemies and He joined your hearts together, so that by His Grace you became bretheren..." (3:103).

The implication is that the Muslim doctor is a member in a Muslim community where the healthy body of the individual is crucial for its survival and development. The doctor has a big say and great weight in influencing his patients and in righteously guiding their orientation. Besides, he should be actively involved in propagating true Islam among Muslims and non-Muslims. Almost all Christian missionaries depend on medical doctors when approaching alien masses, taking advantage of the humanistic services doctors render to poor sick people. In a country like USA - where we live, the best missionary service that a medical practitioner can render is to behave all the time in accordance with his Islamic beliefs, to declare his conviction, and to be proud of it. Thus he can be a good model for others to win their confidence and hearts.

2. *Faith and Healing*: By accepting the fact that Allah is the healer - and that the doctor is only an agent, both patients - irrespective of their creeds - and their doctors, fight their battle of treatment with less agony and tension, I think it is an established fact that such spiritual conviction does improve the psychological state of the patient and boost his morale, and thus help him overcome his physical weakness and sickness. There are many examples where faith plays an important part in the process of healing. In my opinion, a Muslim doctor must make his faith the backbone of his healing career.

3. *Reprehensible, Prohibited and Permissible Acts*: More than any other professional, the Muslim medical doctor is confronted frequently with questions concerning the Islamic legitimacy of his activities. There are diverse daily controversial problematic issues on which he is supposed to take a stand: e.g., birth control, abortions, opposite sex hormonal injections, transsexual operations, brain operations affecting human personality, plastic surgery changing physiognomy, extra-uterine conception, etc. The

Muslim doctor should not be guided in such issues merely by the law of the country. He must also find the Islamic answer and rather adopt it as much as he can. To find the answer is not an easy matter, especially if the doctor himself has no reasonably solid background in the field of Islamic teachings. Yet, to gain such knowledge is very simple and would not consume much time as generally presumed.

In general, every Muslim must have a preliminary knowledge of what is reprehensible and what is prohibited. One has to admit that our early education as individuals is very deficient in this regard. But this does not justify our ignorance of the essentials of our religion and our indifference towards its injunctions. There is no difficulty nowadays to obtain a few reference books about our Shari'ah and to find out the answers to most - if not all - our medical queries. The most preliminary study of the Islamic science of "Usul" would give the doctors the main principles of analogy, "Qias", preferential application (Istihsan) and jurisdistic initiation (Istihsan).

The importance of such knowledge becomes conspicuous when the subject of the issue is purely technical and thus lies beyond the reach of the normal religious scholar. Besides, there are many secondary questions that arise in the course of dealing with patients where the personal judgement of the doctor is the only arbiter. There, as always, the doctor needs a criterion on which he can build his code of behavior and the ethics of his medical procedure.

To conclude, the role of the Muslim doctor is briefly to place his profession in service of his religion. To this end, he must know both: medicine and Islam.

ISLAMIC VIEW OF THE WELL-BEING OF MAN

Dr. Ala' Eddin Kharofa

Islam is deeply concerned about the material, moral, and spiritual well being of man. Even when he is a shapeless fetus in the womb of his mother, Islam regards it as a human being and appoints a share and a right for it in inheritance to which it is fully entitled after its birth.

After birth and during childhood if the parents are separated, Islam recommends that the child stay with the mother, to be suckled and raised by her at this tender age. Up to the age of 7 or 9, according to the opinion of some scholars, he is to stay with mother, for obviously being woman she is far more patient than the father. Emotionally she is better equipped to look after the welfare of the child at this early stage of its life.

Islam recommends parents to be patient, merciful and compassionate towards the child and educate and train him in the teachings and principles of Islam. Parents should teach the child prayer, and should order him to pray at the age of seven and to study religion. Likewise it teaches the children to obey their parents and to respect and treat them kindly.

Islam urges its followers to acquire knowledge, a necessary condition for welfare and well being of humans. The Qur'an says: "Are those equal, those who know and those who do not know? It is those who are endued with understanding that receive admonition (Zumar, 39:9). In another verse we read: "Those truly fear God, among His servants, who have knowledge: for God is exalted in might, Oft-Forgiving" (Fatir, 5:28). Yet in another place it says: "God will raise up, to (suitable) ranks (and degrees), those of you who believe and who have been granted knowledge" (Mujadila, 58:11).

The importance of knowledge in Islam can be gauged by the fact that the very first word of *Wahi* (Revelation) is "*Iqra*" (Read!). And a chapter of the Divine book (chapter 68), bears the title *Al-Qalam* (or the Pen), the

implement of writing, an art by which we can preserve all knowledge. Its first verse reads: "Nun. By the pen, and by the (record) which angels write" (*Al-Qalam*, 68:1).

At the very beginning of the Qur'an, we read in Sura Al-Baqarah about the angels, who expressed their reservations about Adam's fitness to be God's vicegerent on earth. God demonstrated them that Adam had this ability, because he had knowledge which they (the angels) did not possess, and his superiority to them, and worthy of being God's vicegerent on earth.

The Qur'an makes repeatedly references to the *raskhun fil 'ilm* (men who are well-grounded in knowledge), and advises the believers to refer to them to check and verify things.

Our Prophet Mohammed (pbuh) equated knowledge with *nur* (or light), described it as a blessing of God, and always urged his Companions and followers to acquire it. Islam is concerned with the welfare of every person, and seeks to help him protect his body as well as his soul. It prohibits liquor, for instance, to protect human mind and body. Drinking impairs and weakens man's control over his mind and actions. In a state of drunkenness a person may commit all sorts of crimes against himself or others. Islam has forbidden the consumption of all kinds of liquor to save man from its harmful effects.

Similarly in order to protect society, Islam has prescribed capital punishment for murder. Allah says: "If anyone slew a person - unless it be for murder or for spreading mischief in the land - it would be as if he slew the whole people: and if anyone saved a life, it would be as if he saved the life of the whole people" (*Al-Ma'idah* 5:32); and "Nor take life - which Allah has made sacred - except for just cause. And if anyone is slain wrongfully, we have given his heir authority (to demand *qisas* or to forgive); but let him not exceed bounds in the matter of taking life; for he is helped (by the law)" (*Bani Israel* 17:33). In another verse we read: "In the law of punishment there is (saving of) life to you, o ye men of understanding: that ye may restrain yourselves" (*Al-Baqarah* 2:179). The Prophet Muhammad (pbuh) said: "Man is a mansion of Allah on earth, and He will destroy anyone who destroys this mansion (of His)." Islam offers the best deterrent for securing human life against crimes like murder and violence.

Likewise to protect property, Islam prescribes chopping off of the thief's hands, Allah says: "As to the thief, male or female, cut off his or her hands: a punishment by way of example from Allah, for their crime; and Allah is exalted in power (*Al-Ma'idah* 5:41). This type of punishment, seems very harsh, but it must be emphasized here that this punishment is enforced when there is no genuine excuse for anyone to indulge in stealing from others. In other words, when a society is fully Islamic and every one's basic needs are well cared for, and when no one need steal from others to meet one's basic needs. The second caliph Umar bin al-Khattab (R)

did not cut the hands of four thieves who had stolen because of hunger and need, and at a time when Arabia was in the grips of an acute famine.

Islam is very much interested in establishing a society that is pure, free from filth of sin and crime, a society in which men and women would live in total freedom from fear of all kinds, including fear of crimes and violence. Islam, therefore, wishes to build that society on foundations of piety, fear of God and absolute justice, in which each person respects the rights of other people and does not trespass on them.

Islamic concern for human welfare goes far beyond the protection of human life and property. It also provides for the protection of human dignity and honor and prescribes a special law for it, the law against *qadhf* or slander, for wrongfully accusing a chaste woman of fornication.

To help human beings live in happiness and tranquility, Islam has legislated marriage. The ideal life for a man or a woman, according to Islam, is to live in matrimony, in peace and love. Islam teaches us to live and cooperate with others in all that is good, and to maintain amicable relations with all. Islam brings people together to work together as a community. The well-being of man can be achieved through working together with others and not in isolation. An individual is a part of a bigger whole, and as such he must put the collective interests above his personal selfish interests. It is morally incumbent upon him to look after and safeguard the interests of the community at all times. He must work and live as a responsible person and remember that the welfare of the community is interlinked with his personal well-being. Our Prophet (peace be upon him) said: "He who does not care for Muslims, is not of them."

The Qur'an teaches that the key to the well-being of the human soul is *taqwa* (or fear of God). When a Muslim commits a sin, he is sinful, but if he repents and asks for Allah's forgiveness he is forgiven, provided he is sincere and resolves never again to deliberately repeat it. Thus repentance purifies a person and gives him a new lease of moral and spiritual life. This keeps hope alive in the human heart and rids it of feelings of despair and helplessness.

A Muslim knows that his life on this earth is temporary; that he is here on "probation". Therefore, he does not attach too much importance to wealth, power, rank, position, children, etc. If, through a reversal in fortunes, he loses these, he is not overwhelmed with sorrow; he is not crushed. He never surrenders to despair. He is always full of hope, and knows that adversity might be a test of his faith. He, therefore, puts his trust in God's boundless mercy, and accepts whatever befalls him, without any gripe. He never doubts that things, no matter how bad at the time, will work out for him in the end. His faith in God's infinite mercy remains unshaken through thick and thin. He always remembers the words of Allah: "(This is so) that you may not grieve over what is lost to you, nor

exalt because of that which he has given to you. And Allah loves not any self-conceited boaster (Hadid 57:23).

In brief, Islam's view of the well-being of man is that he abstains from everything that it has forbidden, and does whatever it has commanded him to do. Let him follow these clear-cut guidelines and he will enjoy peace and happiness in this life as well in the one to come.

ISLAMIC CODE OF MEDICAL PROFESSIONAL ETHICS

Abdul Rahman C. Amine, M.D., and
Ahmed Elkadi, M.D.

Medicine was defined by Muslim physicians such as Al-Razi (841-926 A.D.) and Ibn Sina (Avicenna, 980-1036 A.D.) as the art concerned with the preservation of good health, combating of disease, and restoration of health to the sick. For several centuries, the world witnessed and benefitted from the great advances made by Muslim physicians in the area of health sciences. These advances were not just based on technical skill or intellectual superiority. They were equally well founded on a clear understanding of the role of the Muslim physician as derived from Islamic teachings and philosophy. For thousands of years, ethics have been recognized as an essential requirement in the making of a physician. Although the ancient codes of ethics^{1,2} have to some extent stressed this requirement, they were still deficient and contained grave errors.³ Contemporary codes of ethics tend to be more liberal and less restrictive.⁴ The Qur'anic ethics, on the other hand, stand out as a perfect model for all mankind, all professions, and all time.

The medical ethical requirements proposed in this paper are primarily based on Qur'anic ethics. They include guidelines for the physician's behavior and attitude, both at the personal and professional levels. The same standard of moral and ethical values should guide the physician in his private life and while conducting his professional business. A person who lacks moral values in private life cannot be trusted in professional activities, even with the highest professional and technical qualifications. It is

¹Oath of Hippocrates.

²Oath of the Hindu Physician.

³Professional Ethics; Ethics in the Medical Profession by Ahmed Elkadi, M.D., *Journal of I.M.A.*, September 1976, pp. 27-30.

⁴*Ibid.*

impossible for a person to have two different ethical standards. Truthful is God the Almighty when He says:

"God has not made for any man two hearts in his body..."⁵

The following verses from the Qur'an are most suited as a guide for the personal characteristics of the physician.

"Luqman admonished his son: 'My son,' he said 'Serve no god besides God for idolatry is an abominable injustice. We have enjoined man to show kindness to his parents, for with much pain does his mother bear him, and he is not weaned before he is two years of age. We said: Give thanks to Me and to your parents; to Me shall all things return. But if they press you to serve besides me what you know nothing of, do not obey them, be kind to them in this world and follow the path of those who submit to Me; to Me you shall all return and I will declare to you all that you have done. 'My son, God will know about all things be they as small as a grain of mustard seed, be they hidden inside a rock or in heaven or on earth. God is wise and all-knowing. My son, establish regular prayer, enjoin what is just and forbid what is wrong; endure with fortitude whatever befalls you, for this is firmness of purpose in the conduct of affairs. Do not treat men with scorn nor walk proudly on the earth; God does not love the arrogant boaster. Rather, let your gait be modest and your voice low; the harshest of voices is the braying of the ass'..."⁶

God also says:

"...and those who restrain anger and forgive other men, verily God loves those who do good."⁷

God further states:

"It was the mercy of God that you have dealt with them gently and if you were severe and harsh-hearted they would have broken away from about you. Therefore forgive them, pray for their forgiveness, and consult them in the conduct of affairs: then, when you have decided to proceed, depend on God for support: verily God loves those who depend on Him."⁸

Based on the above, the Muslim physician must believe in God and in Islamic teachings and practice, both in private and public life. He must be grateful to his parents, teachers, and elders. He must be humble, modest, kind, merciful, patient, and tolerant. He must follow the path of the righteous and always seek God's support.

⁵Qur'an 33:4.

⁶ Qur'an 31:13-19.

⁷ Qur'an 3:134.

⁸ Qur'an 3:159.

A physician equipped with these virtues is capable of carrying out the needed professional requirements. The first professional requirement is to acquire and maintain proper knowledge. God makes it clear in the Qur'an:

"...Say: Are those equal, those who know and those who do not know?..."⁹

God also states:

"...Verily, those who fear God among His servants are those who have knowledge..."¹⁰

Therefore the believer is encouraged to always seek knowledge.

"...Say: O my Lord, advance me in knowledge."¹¹

The physician must also abide by the legal rules regulating his profession provided they do not violate Islamic teachings. The need to respect law and order is reflected in the following verse:

"Oh you who believe: Obey God and obey the Apostle, and those charged with authority among you..."¹²

Recognizing God as the maker and the owner of both patient and physician, it is only logical that the care provided by the physician to his patient must be in accordance with God's guidelines.

A subject of great importance is the subject of life. Life is given by God and cannot be taken away except by Him or with His permission. God says in the Qur'an:

"It is He who created death and life, that He may try which of you is best in deed. ..." ¹³

He also says:

"...Nor can they control death nor life nor resurrection."¹⁴

⁹ Qur'an 39:9.

¹⁰ Qur'an 35:28.

¹¹ Qur'an 20:114.

¹² Qur'an 4:59.

¹³ Qur'an 67:2.

¹⁴ Qur'an 25:3.

God further states:

"...Whoever kills a human being not in lieu of another human being nor because of mischief on earth, it is as if he has killed all mankind: and whoever saves the life of a human being, it is as if he has saved the life of all mankind..."¹⁵

The physician therefore has no right to terminate any human life under his care. This also applies to the unborn baby since clear evidence indicates that human life starts at the time of conception. Consequently, the physician has no right to terminate the life of the unborn baby unless it constitutes a definite threat to the mother's life.

The physician must realize that God is watching and monitoring every thought and deed. This was clearly indicated in the verses quoted earlier from Chapter 31 of the Qur'an.¹⁶ The same verses also indicate that the parents' demands are not to be obeyed if they are in violation of God's orders, in spite of the fact that parents are considered to be the most important persons to their children after God. Following the same principles, the physician has no right to allow popular demand or his patient's wishes if they are in violation of God's orders.

Based on sound logic and clear Islamic teachings, the physician has no right to recommend or administer any harmful material to his patients. The most concise yet comprehensive guide in this matter is found in the following verse of the Qur'an:

"...and He makes for them good things lawful, and bad things forbidden..."¹⁷

This implies that anything forbidden by God must be bad or harmful; and anything proven to be bad or harmful must be forbidden.

The humanitarian aspect of the medical profession must never be neglected nor overlooked. The physician must render the needed help regardless of the financial ability or ethnic origin of the patient. A beautiful hint is found in the following Qur'anic verses:

"And they feed, for the love of God, the indigent, the orphan, and the captive, (saying) 'We feed you for the sake of God alone: no reward do we desire from you, nor thanks'..."¹⁸

¹⁵ Qur'an 5:32.

¹⁶ Qur'an 31:13-19

¹⁷ Qur'an 7:157.

¹⁸ Qur'an 76:8-9.

When entrusted with the care of a patient, the physician must offer the needed advice with consideration for both the patient's body and mind, always remembering his basic obligation to enjoin what is just and forbid what is wrong.

The physician must protect the patient's confidentiality, reflecting God's description of the believers:

"...Those who faithfully keep their trusts and their covenants."¹⁹

The physician must adopt an appropriate manner of communication and be reminded of the ethics of speech referred to in the Qur'anic verses quoted earlier in this paper.²⁰ God also describes the good believers in the Qur'an and says:

"For they have been guided to the purest of speeches..."²¹

Situations requiring the physician to examine patients of the opposite sex are always a test of his moral character and his strength. A basic instruction is found in the following Qur'anic verses:

"Say to the believing men that they should lower their gaze and guard their modesty; that will make for greater purity for them, for God is well acquainted with all that they do. And say to the believing women that they should lower their gaze and guard their modesty..."²²

God further says:

"God does wish to lighten your burden, for man was created weak."²³

It is therefore advisable that the physician examine patients of the opposite sex in the presence of a third person whenever feasible. This will be an added protection for the physician and the patient.

The physician must not criticize another physician in the presence of patients or health personnel, remembering the Qur'anic advice:

"O you who believe, let not some men among you make fun of others: it may be that they are better than them; nor let some women make fun of others; it may be that they are better than them: nor defame, nor be sarcas-

¹⁹ Qur'an 23:8.

²⁰ Qur'an 31:13-19.

²¹ Qur'an 22:24.

²² Qur'an 24:30-31.

tic to each other, nor call each other by offensive nicknames..."²⁴

God further says:

"God does not love that evil be voiced in public speech, except where the person has suffered injustice..."²⁵

The physician must refuse payment for the treatment of another physician or his immediate family. There is no specific instruction regarding this particular matter in the Qur'an or Islamic tradition. However, reference is made to another situation which may be used in analogy. God says regarding Zakat money:

"Alms are for the poor, the needy, and those employed to administer the funds..."²⁶

Here is a situation where the persons providing a certain service are entitled to the use of the same service at the time of need. Applying the same principle, the physician who provides the health service to others is entitled to the use of the same service at the time of need.

Last, but not least, the physician must always strive to use wisdom in all his decisions and the reward will be great. Truthful is God the Almighty when He says:

"...and he whom wisdom is granted he receives indeed a great deal of good indeed..."²⁷

In closing, reference is made to the Oath of the Muslim Physician adopted by the Islamic Medical Association²⁸ in 1977 which reflects the spirit and philosophy of the Islamic code of Medical Professional Ethics proposed in this paper.

In summary, the Muslim physician must believe in God and in the Islamic teachings and practice it in private and public life; be grateful to his parents, teachers, and elders; be humble, modest, kind, merciful, patient, and tolerant; follow the path of the righteous; and always seek God's support. The Muslim physician must stay abreast of current medical knowledge, continuously improve his skills, seek help whenever needed, and

²⁴ Qur'an 4:28.

²⁵ Qur'an 49:11.

²⁶ Qur'an 4:148.

²⁷ Qur'an 9:60.

²⁸ Qur'an 2:269.

²⁹ Oath of the Muslim Physician, Convention Bulletin of the I.M.A., October 1977.

comply with legal requirements governing his profession; realize that God is the maker and owner of his patient's body and mind and treat him within the framework of God's teachings; realize that life was given to man by God, that human life starts at the time of conception, and that human life cannot be taken away except by God or with His permission; realize that God is watching and monitoring every thought and deed; follow God's guidelines as his only criteria, even if they differ with popular demand or the patient's wishes; not recommend nor administer any harmful material; render needed help regardless of financial ability or ethnic origin of the patient; offer needed advice with consideration for both the patient's body and mind; protect the patient's confidentiality; adopt an appropriate manner of communication; examine a patient of the opposite sex in the presence of a third person whenever feasible; not criticize another physician in the presence of patients or health personnel, refuse payment for treatment of another physician or his immediate family; and strive to use wisdom in all his decisions.

NATURAL THERAPEUTICS OF MEDICINE IN ISLAM

Zeyd Ahmad Ali, M.D.,
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Medicine is both an art and a science. It encompasses prophylaxis or prevention, diagnosis, and finally treatment (both curative and palliative).

Preventive medicine is especially important and has been neglected as a major factor in health care. In fact, it is well documented but little known that most of the health gains (expressed as life expectancy, morbidity, and mortality) attributed to modern medicine are principally due to advancements in diet and sanitation, rather than to the more complex technologies. Preventive medicine as a natural measure of therapeutic stresses the involvement of the individual in his own health care. This is accomplished by educating the patient as to proper nutrition, hygiene and physical activities. Equally important are the psychologic and spiritual factors as these can greatly influence the disease.

Curative medicine is as important as the preventive one. In the process of healing, natural approaches have been used. The natural art of therapeutics is not a new approach in the field of medicine, rather it is as old as man on this planet. Man has done his best in protecting himself from disease and in preventing himself from sickness.

Preventive and curative approaches have been used by man to keep himself healthy, happy and strong. Some of these so-called "primitive" measures have been shown to be scientifically sound and have thus been added to the "modern" therapeutic regimens. Some approaches were considered to be natural (e.g. herbs, natural foods, etc.) while other were oriented towards the use of drugs and synthetic remedies.

Anyone studying or practicing medicine realizes that he is at best providing some therapy to impede the disease process so that the body can take over and effect a cure with the mercy of Allah. In an Islamic sense, the

health care practitioner must be viewed as an agent through which Allah acts. The health care practitioner must not therefore delude himself into a position of exaggerated self-importance.

In this paper the authors wish to approach the subject of natural therapeutics in medicine vis-a-vis the Islamic approach of good and sound health. The paper also includes some aspects of the following: types of natural therapeutics, diet as an approach to natural healing and colleges that deal with natural therapeutics. Some recommendations related to natural approaches in medicine for the Muslim world are also given.

The information provided in this paper is helpful to all those concerned about sound health of the individuals including those group dealing with the allopathic and the natural medicine. This research is of great help to all those colleges teaching medicine and especially those colleges teaching natural therapeutics. It is a source of help to the physicians, patients, hospitals, grocery stores, health food stores and the like. This paper is of great assistance to the Third World, i.e., the emerging nations whose technological resources are meager, and whose health delivery approaches are more or less still oriented towards the natural therapeutic methods.

It is the hope of the authors that an eclectic approach be adopted by the Third World, i.e. to pick up the best of every discipline. It is hoped that the Third World nations will establish an INSTITUTE OF HEALTH CARE DELIVERY which will catalog the entire spectrum of medical approaches including the "natural" methods. If the Third World nations establish such a health institute based on the natural approaches, they will undoubtedly help save themselves money, time, effort and the more expensive technology. This will lead to better healing and finally faster and better results.

II. ISLAMIC VIEWS ON THERAPEUTICS

Islam is a way of life to live, a system to be followed, a code of ethics and a constitution to be applied in the daily life of every person. As such, Islam has many constructive ideas to offer in the fields of health and medicine. In order to find out what Islam teaches, one has to read the Qur'an and the Hadith. Allah says in the Qur'an (Surah Al-Shu'ara 26:80) about healing: "... and when I am ill, it is He who cures me."

The Prophet Muhammad (pbuh) said: "For every disease there is a cure, and when the cure matches the disease, the person recovers by the will of Allah..." This is reported by Jabir bin Abdullah. Similarly Abu Hurairah reported that the Prophet (pbuh) said: "Allah never inflicts a disease without providing a cure for it..."

Regarding the treatment of diseases Usamah bin Shareek reports, saying: "I was with the Prophet (pbuh) when some beduins came and asked him, 'O messenger of Allah: Do we have to take medicine for treatment?' He said: 'Yes, O you the servants of Allah, take medicine, as Allah

Almighty has not created a disease without having created a cure for it except one disease.' When they asked what it was, he said: 'Old age.'" In another version the wording is "Allah never inflicts a disease without providing a cure; only those who are aware of it know it, whereas those who are not aware, are ignorant of it." As to the preventive approach in health, the Prophet Muhammad (pbuh) said: "An ounce of prevention is better than a ton of treatment."

As an art and a science, healing medicine works through prevention (prophylaxis), diagnosis, treatment, and cure. In so doing, the individual may prolong his happy life and reduce the degree and the rate of occurrence of illness. Islam encompasses all these approaches so that a person may stay healthy, happy and strong.

III. LIMITATIONS OF DRUG THERAPY

Drug therapy has become the concern of many people. The reasons are obvious, among which are the following:

A) Most of drug therapy must be closely monitored and carefully dosed. The dose may have to be altered frequently due to the nature of a particular disease process or other concomitant conditions the patient may have.

B) Even so, toxic effects may occur. Often one has to weigh the advantages of drug use against the side effects. The choice is not always clear.

C) Therapeutic drugs are usually much more expensive than preventative measures.

D) The choice whether or not to use drug prescriptions depends greatly on the disease process. Acute, life-threatening diseases usually require such intervention. However, for chronic, non-curable diseases (such as arthritis) the rationale for drug prescriptions is much more subjective. The psychological makeup of the patient is likely to play a greater role in deciding whether to use a drug or not.

IV. TYPES OF NATURAL THERAPEUTICS

Among the natural healing treatments are the following:

A) Preventive medicine

B) Dietetic approach

C) Folk medicine

D) Hakim's medicine

E) Chiropractic

F) Naturopathy

G) Naprapathy

H) Homeopathy

Concerning this subject, Islam's approach to healing is an eclectic one, i.e., one is to use the best of every discipline so that the health of the individual will be preserved.

V. DIET AND NATURAL HEALING

As far as the diet is concerned, Islam has laid down the foundation in the Qur'an and the Sunnah for the best approach in preserving good health. This approach consists mainly selection of the best, preventive methods, and awareness of any harmful drugs. The following is a summary of the main Islamic principles relating relating to diet and health:

A) Allah commands everyone to eat what is lawful (Halal): "O ye people! Eat of what is on earth, lawful and good." (Qur'an, 2:168).

B) People are to ENJOY their food as it affects their personal character. Enjoying food is a part of worship like any other activity of life.

C) Muslims are to SELECT the best quality of food. The Qur'an (Surah Al-Kahf, 18:19)says: "Now send ye then one of you with this money of yours to the town: let him find out which is the best food (to be had)..."

D) Muslims are to EAT the best food after selecting the best. Allah says: "Eat of the good things We have provided for you." (Qur'an, Surah Al-A'raf 7:160).

E) The best approach in the process of prevention is the concept of MODERATION in eating habits. The Qur'an states emphatically "Eat and drink, but waste not by excess, for God loves not the wasters." (Surah Al-A'raf 7:31).

F) Regarding the idea of moderation through diet, Allah says: "Eat of the good things We have provided for your sustenance, but commit no excess therein." (Qur'an, Surah Taha 20:81).

G) Another approach that Islam prescribes for its followers is the idea of TOTAL ABSTINENCE from food and drinks for one whole month from dawn to sunset. The benefits of fasting have been tested and documented, especially in biochemistry, physiology, clinical therapeutics, clinical nutrition, etc. It is beyond doubt that fasting helps the individual to get rid of most of the toxins in his body. At the same time fasting increases productivity and by its frugality curbs inflation. In this regard, it would be a good idea to point out here what Islam says in this regard: "O ye who believe! Fasting is prescribed for you as it was prescribed for those before you, that ye may learn self-restraint" (Qur'an, Surah Al-Baqarah 2:183). The Prophet Muhammad (pbuh) said: "Fast (the month of Ramadan) and get yourself healed."

The word Taqwa, translated in the above verse as 'self-restraint' in many ways is related to health and disease, food and dietetics, physical fitness, etc., besides signifying self-training, self-restraint, self-control, self-discipline, self-education and self-evaluation.

It should also be mentioned here that the personality, behavior, and performance of an individual is affected by the food that he or she consumes and, therefore, one must select the best type of food to maintain good health. There is thus a linkage between physical and mental health. A sound mind and a sound body go together. It is not possible to have one

without the other.

It is difficult to reason well while one is physically sick. Similarly, mental illness may adversely affect various body functions, e.g., an ulcer). This dual, complementary approach to mental and physical health is exemplified by Islamic views towards the nursing of infants. The advantages of breast feeding are numerous since the mother transfers many nutrients, hormones, and even antibodies through suckling. The particular amino acid composition of human milk may accelerate and even increase cognitive development in the infant. In addition, one must not forget how this close physical contact strengthens the emotional relationship between the mother and child. About breast feeding Allah says in the Qur'an: "The mothers shall give suck to their offspring for two whole years if the father desires to complete the term. But he shall bear the cost of their food and clothing on equitable terms. No soul shall have a burden laid on it greater than it can bear. No mother shall be treated unfairly on account of her child, nor father on account of his child. An heir shall be chargeable in the same way. If they both decide on weaning, by mutual consent, and after due consultation, there is no blame on them. If ye decide on a foster mother for your offspring, there is no blame on you, provided ye pay (the mother) what ye offered, on equitable terms. But fear God and know that God sees well what ye do." (Qur'an 2:233).

VI. COLLEGES FOR NATURAL THERAPEUTICS

A) Definitions

1. Allopathy

"Substitutive therapy" auxotherapy; a therapeutic system in which disease is treated by producing a morbid reaction of another kind or in another part - a method of substitution."

2. Naturopathy¹

"A system of therapeutics in which neither surgical nor medical agents

¹Naturopathic medicine is a distinct system of healing - a philosophy, science, art, and practice which seeks to promote health through education and the rational use of natural agents. As a separate profession, naturopathic medicine incorporates all natural methods of healing, including such things as botanical medicines, homeopathy, nutritional therapy, medical electricity, psychology, and manipulative therapies.

The human body possesses tremendous power to heal itself through mechanisms of homeostasis - restoring balance in structure and function and adapting to environmental changes. The naturopathic physician uses those therapeutic substances and techniques which act in harmony with the body's self-healing processes and avoids treatments which are designed to counteract or supervene them. Ideally, naturopathic methods are applied as a means of stimulating and enhancing this "healing power of nature."

are used, dependence being placed only on natural forces."

3. Naprapathy²

a) "A system of therapeutic manipulation based on the theory that morbid symptoms are dependent upon strained or contracted ligaments in the spine, thorax, or pelvis."

b) Naprapathic Philosophy, Theory and Principles. A system of specific manipulative therapeutics based on the theory of interference to nerves, blood vessels and lymph channels, by pathologic soft tissue such as connective tissue or muscles with consequent secondary pathology or dysfunction resulting therefrom."

4) Chiropractic³

"A philosophic system of mechanical therapeutics that attribute disease to vertebral subluxations; it treats disease with manipulation of the vertebra in order to relieve pressure on the nerves at the intervertebral formation so that nerve force may flow freely from the brain to the rest of the body."

5) Homeopathy

"A system of therapy developed by Samuel Hahnemann on the theory that large doses of certain drugs given to healthy persons will produce certain conditions which, when occurring spontaneously as symptoms of a disease, are relieved by the same drug in small doses."

6) Osteopathy

"A school of medicine based upon the idea that the normal body when in "correct adjustment" is a vital machine capable of making its own remedies against infections and other toxic conditions. Practitioners use the diagnostic and therapeutic measures of ordinary medicine in addition to manipulative measures."

²Naprapathy is a system of manually applied movements, both passive and active, designed to bring motion, with consequent release of tension, into abnormally tensed and rigid ligaments, muscles and articulations of the human body. These tissues and structures are normally moveable, flexible and resilient.

Naprapathy contends that a favorable internal environment is essential for growth, development and maintenance of all normal health. Naprapathy's procedures assist the body to maintain this favorable internal environment by releasing points of tension and by the use of rational dietary and hygienic measures.

³Chiropractic medicine gives particular attention to the relationship of the structural and neurological aspects of the body in health and disease. Its therapeutics utilize adjustive and manipulative procedures, physiological therapeutics, dietary correction and supplementation, kinesiology and rehabilitative procedures, and other drugless procedures to aid in restoration of anatomical relationships and physiologic capabilities.

7) Folk Medicine

"Treatment of ailments in the home by remedies and simple measures based upon experience and knowledge handed on from generation to generation."

8) Acupuncture

"An ancient medical system of therapy using puncture by fine needles. Most recently, this has been used for anesthesia."

9) Preventive Medicine

"The branch of medical science that treats by the prevention of disease."

10) Curative Medicine

A special type of medicine which is designed to restore health - it means: "to heal, to make well, and is a special method or course of treatment."

11) Podiatry

Medical treatment, the specialty that includes the diagnosis and/or medical, surgical, mechanical, physical, and adjunctive treatment of the disease, injuries and defects of the human foot."

12) Hakim

Hakim is an Arabic word. Literally, it means: a wise and a knowledgeable person. In practice it is used for a physician without a formal education or a degree. His knowledge is through personal tutoring as well as through inheritance. The "medicine" that a Hakim practices is composed of a combination of herbal medicine, homeopathy, naturopathy, chiropractic and others. This type of "medicine" is still practiced in most of the "Developing Nations".

VII. RECOMMENDATIONS ON NATURAL FOODS

A. Natural Foods

There are four different types of vitamins sold as "natural." These are:

1) An extract of food concentrated so that the vitamin is in higher quantity than the original food - examples: Heart muscle as a source of B vitamins, liver and yeast as sources of B vitamins, rose hips and edible organ meats as sources of vitamin C.

2) Highly concentrated crystals or purified vitamins altered somewhat, but extracted from foods - examples: Vitamin E acetate from vegetable oils, from B-12 as cobalamin concentrate.

3) Synthetic vitamins for which the starting materials are natural materials - examples: Ascorbic acid from corn sugar, Vitamin A from citral,

derived from lemon grass.

4) If a natural base such as yeast is included, the addition of synthetic vitamins may not prevent the product from being called "natural." Many food supplements include ground up deposits of rock from the desert as sources of minerals and these are called "natural" minerals because they come from natural rock deposits.

B. Reading Labels

When reading labels, one has to be careful of the following:

1) Look for Dietary Balance

a. Are the vitamins present in proportion to their individual recommended daily intakes?

b. Do B-complex formulas include all the B-complex vitamins, and are they adjusted to recommended amounts?

c. Are ingredients listed in amounts of active components?

d. Are insignificant amounts of vitamins included for advertising purposes?

e. How much "window dressing" is used?

f. Are ingredients adjusted to "cost" rather than requirements?

2. Know your preferences for sources

3. Look for expiration dates

4. How well are they assimilated?

5. Know what you mean by "natural" - "organic"

a. All vitamins are organic molecules and fall into this chemical classification.

VIII. RECOMMENDATIONS TO THE MUSLIM WORLD

It is recommended that the Muslim World look into the concept, philosophy and benefits of the natural and practical implications. It is also recommended that the ministries of public health in cooperation with the ministries of higher education should establish colleges of natural healing arts. Such colleges should include all types of natural healing including the old Arab Hakim, folk medicine, homeopathy, naturopathy, chiropractic, naprapathy and the like. It is recommended that they take into consideration an eclectic approach as well as the needs of the Muslims everywhere: urban and rural areas. Since most of the people in the Muslim World are inclined to a natural approach of healing, such a project could be very successful, very beneficial, less expensive and much safer to the lives of the individuals.

BIBLIOGRAPHY

1. Aikman, L. "Nature's Healing Arts; From Folk Medicine to Modern Drugs." National Geographic Society Books, 1977.
2. Benowicz, R.J. "Non-Prescription Drugs and Their Side Effects". Grosser and Dunlap, A. Filmway Co. Publishers, N.Y. 1977.
3. Dingle, J.H. "The Ills of Man" Scientific American. 293: 77-84, Sept. 1973.
4. Dunlop, D.M.D. "Drug Control and the British Health Service." Annals of Int. Medicine 71 (2): 237-244, 1969.
5. Glazeer, W. "The Task of Medicine." Scientific American, 288 (4):1433, 1973
6. Goddard, J.I. "The Medical Business." Scientific American. 293: 161166, Sept. 1973.
7. Goodhart, R.S. and Shils, M.E. "Modern Nutrition in Health and Disease - Dietotherapy" Lea and Febiger, Philadelphia, 1974.
8. Green, L.S. (Editor) Malnutrition, Behavior, and Social Behavior, p. 1-288., Academic Press, N.Y., 1977.
9. Lew, E.A. and Seltzer, F. "Color Survival of Generations Since 1840." Milbank Memorial Fund Quarterly, July 1964.
10. McKeonn, T. and Lowe, C.R. "An Introduction to Social Medicine." F.A. Davis Company, p. 1-18, 1973.
11. McManus, I.C. "Life Expectancy of Italian Renaissance Anists." Lancet 266-267, 1975.
12. Muharnmad, S.D. Al-Tibb Al-Nabawy (Arabic) Dar Al-Hikmah, Beirut, Lebanon.
13. Newton, N. "Battle Between Breast and Bottle". Psychology Today, p. 68- 89, July 1972.
14. Newton, N. "Treble Sensous Woman." Psychology Today, p. 68-73, July 1971.
15. Sake, A.H. "Dietary Regulations and Food Habits of Muslims" J. Amer. Diet. Assoc. 58: 23, 1971.
16. Sake, A.H. "Fasting in Islam". J. Amer. Diet. Assoc. 67: 17-21, 1975.
17. Sake, A.H. "Overeating and Behavior" The Muslim Scientist and in J. Islamic Med. Assoc.
18. Selye, H. "Stress: It's a General Adoption Syndrome". Psychology Today, p. 25-56, Sept. 1969.

ISLAMIC PHILOSOPHY AND MEDICAL ETHICS

Amanullah Khan, M. D., Ph.D.

One of the hottest issues in medicine, these days, is the subject of medical ethics, morality, and liability. If one looks back, it becomes apparent that Hadith refers to these problems. It will also be of interest to note that problems faced by the physicians and the patients today are not any different from the problems faced in earlier periods of history. I would like to quote some ahadith on the responsibility of the physicians.

"A person who practices art of healing when he is not acquainted with medicine, will be responsible for his actions."

In another hadith the prophet (pbuh) said:

"O servants of Allah, seek treatment, for Allah has not sent down any illness without sending down its treatment."

Hadith also made treatment mandatory or obligatory when a treatment was definitely available, and also if holding off this treatment would be harmful. But if one is unsure of any benefit from a treatment and any harm is feared, then it is discouraged. These principles were designed to discourage quackery and protect the patients.

One of the most extensive works dealing with ethics was written by Ishaq ibn Ali al-Ruhawi, a Christian who embraced Islam. He also wrote extensively on Galen. It is not possible to cover here all aspects of his writings. His book, *Adab al-Tabib* (Ethics of a Physician) is an extensive work. It consisted of 112 folios with 17 lines per page. This was found in Suleymaniye Kitabhane. Its English translation appears in the *The Transactions of the American Philosophical Society*, Vol. 57, part 3, 1967, Philadelphia. The Islamic philosophy served as a basis for defining and suggesting solutions to the ethical and moral problems facing physicians. The translator of this work, Martin Levy, in his preface says, and I quote:

"In addition, the contents of this world are remarkable in their delineation of the manner in which Muslim (and to lesser extent, Christian) religious ideas were made to harmonize with the older science and ethics of the Greeks in particular."

The Islamic philosophy and the Muslim code was so realistic and practical that al-Ruhawi was at ease in dealing with this difficult subject. The society was changing from a tribal primitive society to a more orderly society with emphasis on human values and strong religious feelings. These were times of great changes. Therefore, the setting for this work was not any different from the one prevailing at present. It may be worthwhile just to glance at the titles of the 20 chapters of *Adab al-Tabib*.

1. The loyalty and the faith of the Physician, and Ethics He Must Follow to improve His Soul and Morals.
2. Care of the Physician's Body
- 3. What the Physician Must Avoid and Beware of
4. Directions of the Physician to the Patient and Servant
5. Manners of the Visitors
6. Care of Remedies by the Physician
7. What the Physician Asks the Patient and the Nurse
8. What the Patient May Conceal from the Physician
9. How the Healthy and Ill Must Take Orders of the Physician
- ✓ 10. Training of Servants by the Patient before Illness
11. Patient and Visitors
12. Dignity of the Medical Profession
13. Respect for the Physician
14. Physicians and Peculiar Incidents to Aid Treatment
15. Medical Art for Moral People
16. Examination of Physicians
17. Removal of Corruption of Physicians
18. Warning against Quacks
19. Harmful Habits
20. Care of the Physician Himself

Adab al-Tabib is a beautiful illustration of the fact that problems of responsibility, ethical dilemmas, and needs of the society are nothing new to medicine. A review of this work brings home the realization that the present day physician may have been derelict in his responsibility towards the current ethical needs. In the past, it was the physician who was the advocate of morality, who defended ethics, and who was in the forefront in delineating these areas. During the recent years, due to a variety of reasons, a narrow approach or lack of emphasis on ethics in medical training was noticeable. As a result the physician is no longer seen as a stalwart defender of ethics and morality.

The definition of ethics and morality in medicine has lately become a favorite topic for politicians and non-physician bureaucrats who lack the insight into the whole gamut of patient-physician relationship. It is time that the physician stood his ground. He is still regarded very highly and trusted by the people as shown by polls. Unless the physician takes proper steps, the public trust is likely to wither away. Every teaching physician needs to realize his duty - to train the budding physicians, not only in the art of medicine, but also in handling the ethical dilemmas of medical practice.

In the present day controversies of medical ethics, certain other aspects of the responsibilities of the other parties involved, which have been well delineated by Ruhawi, have been completely ignored in the recent years, for example, the responsibilities of the patient and the society towards a physician. The patient has equal responsibility in the relationship between the physician and the patient. Similarly, the society has to realize the nature of demands placed on a physician and afford him the support that he may need at times.

ISLAM AND MEDICINE¹

Hasan Ghaznawi, M.D.

Islam is the religion of all times and places. It is a perfect system of temporal values. Every word of the Qur'an is in fact an experience of great reality, and science helps take a step in that direction. Knowledge is limitless and its horizons are constantly expanding with every stride of progress opening up fresh horizons. According to the Qur'an, knowledge is a comprehensive text and it involves all branches of science, religion, technology, agriculture, engineering and medicine. It is definitely a miracle of Islam that it expands on all branches of human knowledge. The Qur'an says: "*We have revealed to you the Book so that it might be a clear evidence for everything.*"

In the present paper, I have tried to elucidate that the guidelines given in the Qur'an and Sunnah concerning the promotion of physical health of humans have been duly proved by years of modern medical science research all over the world. Here I will deal with some of them.

PRAYERS:

In Surah Al-Qamar God deprecates those "*who are careless in their prayers or offer them only for show.*" The blessed Prophet (pbuh) told us "*Prayers certainly promote health.*"

Although the real purpose of prayers is the worship of God, yet it has a large number of additional benefits also.

¹This article was presented at the 10th Annual Convention of Islamic Medical Association in Orlando, Florida, on October 21-23, 1977.

EXERCISE:

When we eat three times daily, we need exercise to lessen the cholesterol in the body which increases in blood after meals, thickens it and leads to the deposition of slit-like substance in the arteries.

In addition to saving us from sins and elevating us to the heights of spirituality, prayers are great help in maintaining our physical health. They keep our body active, help digestion and save us from muscle and joint diseases through regular balanced exercise. They help the circulation of blood and also mitigate the bad effects of cholesterol. Prayers play a vital role in acting as a preventive measure against heart attack, paralyses, premature senility, dementia, loss of sphincter control, diabetes mellitus, etc.

Collateral circulation plays a major role in decreasing the danger of heart attack in patients. Patients above 55 years of age with this type of circulation have less severe attacks. It is possible to speed up the development of collateral circulation by regular and balanced exercises performed during the prayers that are not only potent, preventive measure against coronary heart diseases but also help in the development of collateral circulation in those people who have already suffered a heart attack or are prone to it.

Heart patients should offer the five obligatory prayers regularly as and when permitted by their doctor to leave bed.

The prayers are arranged in a manner that those at the time of empty stomach are brief but those after meals are longer and give more exercise to the body.

During the month of Fast (Ramadan), an additional twenty Rakaat (Tarawih) are offered besides the late evening prayers, which incidentally help to expend the additional calories usually consumed after breaking fast.

The performance of prayers put almost all muscles of the body in action. Different groups of muscles are activated while performing prayers. During Sajda blood supply to the brain is improved. One of the useful methods to strengthen the muscles of the knee joints to mitigate the strain on knees in osteo arthritis is the regular exercise of these muscles during prayers.

HEART

This vital organ of the body has to be always healthy and efficient as it is responsible for the circulation of blood. Diseased heart results in deterioration of the healthy body. We obtained this knowledge after centuries of scientific research yet we were told about this fourteen hundred years ago by our great Prophet (peace be upon him): *"Verily in the body there is a piece of flesh which if it is sound the whole body is sound but if this piece of flesh develops some defect the whole body becomes unhealthy. Behold, this piece of flesh - it is heart"* (Bukhari and Muslim).

SIESTA

It was the habit of our blessed Prophet to take a short nap after lunch; his companions also followed this practice. This short nap gives relief to the vital organs of the body like the heart and the brain.

MODERATION IN FOOD

Both the Qur'an and the Hadith have touched on this topic. The Qur'an tells us in Ayah 30 of Surah Al A'raf: *"O children of Adam, take your adornment at every place of worship and eat and drink but do not be prodigal. Lo! He loveth not the prodigal."*

Emphasizing this, the Prophet strictly forbade overeating, saying, *"It is enough to eat few morsels of food to keep one's back straight."*

"If you must eat more, be sure that only one third of your stomach is filled with food, one third is left for water and the remaining one third for air."

"A Muslim eats in one intestine (stomach) whereas a non believer eats in seven intestines."

It has been proved beyond doubt that overeating is the root of many diseases and also responsible for premature senility. It produces obesity, predisposes to dangerous diseases like diabetes mellitus, hypertension, coronary heart disease and paralysis.

DIABETES MILLITUS

This is due to insulin deficiency. Overeating causes the special cells of the pancreas (islets of Langerhans) to overwork, so it cannot meet the increased demand for insulin. Those cells may get tired, be atrophied and cause deficiency of insulin.

PARALYSIS, CORONARY HEART DISEASE AND PREMATURE SENILITY

Their basic cause is the narrowing of the coronary arteries. Paralysis is the natural result of blocking of an artery in the brain. Should this happen in the heart myocardial infarction results. Premature senility results when the majority of the arteries in the body get narrowed.

Silt in the form of cholesterol and triglycerides is deposited in the arteries. Overeating increases blood cholesterol levels. Pork and beef contain high cholesterol while on the other hand birds have the least amount. The Qur'an mentions that bird meat is one of the delicacies of Paradise.

The olive has been repeatedly mentioned in the Qur'an, and statistics show that heart attacks occur more in Northern Italy where they use butter and

margarine for cooking than in Southern Italy where olive oil is generally used.

Patients suffering from the narrowing of the coronary artery usually develop the heart attack after a heavy meal.

FORBIDDEN ARTICLES OF FOOD

1. Blood

Ingested blood on reaching the intestine is acted upon by various bacteria normally present there, producing poisonous products like ammonia which is toxic to the liver. Therefore, God has forbidden us to eat or drink blood and has prescribed a method for slaughtering animals which drains most of their blood.

2. Pork

There are two harmful worms harbored by pigs, one is "TAENIA-SOLIUM" which on ingestion passes to the brain and can cause epilepsy. The other is "TRICHINELLA SPIRALIS" which passes to the muscles and brain causing muscular swelling and pain and also epilepsy. Pork has more fat and cholesterol than any other meat.

3. Alcohol

Numerous diseases have been attributed to alcohol, including dyspeptic trouble, peptic ulceration, stomach cancer, pancreatitis, cirrhosis liver, vitamin deficiency and coronary heart disease.

CIRCUMCISION

It is a sunnah for every Muslim to be circumcised. This is medically suggested nowadays as a toxic substance called Smegma may collect under the redundant skin causing cancer of the genitalia in both a man and his wife, inflammation of the penis, phimosis, sticking of the redundant skin over the urethral opening leads to difficulty in urination.

WASHING AFTER DEFECATION

This beneficial habit saves us from Pilonidal sinus which is an hairy abscess and occurs near the anal opening.

Pyelonephritis: This is more common in women due to the proximity of the urethral opening to the anus so using toilet paper may transfer germs like *E.coli* to the urethra.

ABLUTION

A prerequisite of prayers and a most hygienic procedure, it usually keeps the exposed parts of our body like the nose and mouth clean thus avoiding infection.

PREVENTION OF INFECTION

Infection may be transmitted through dirty hands or dirty food.

Hands: It is essential to wash our hands before and after meals. Our blessed Prophet told us: *"It is a blessing to wash your hands before and after meals."* (Abu Dawud & Tirmidhi).

He also advised us not to clean our hands with a towel before meals as it may convey infection from one person to the other particularly viral diseases like infective hepatitis or bacterial infection like Typhoid dysentery and cholera.

Likewise he said *"Whosoever gets up from slumber should not dip his hand in any utensil unless he washes them three times, who knows what things he touched during sleep."* (Bukhari, Muslim, Abu Dawud, Nasa'i).

ARTICLES OF BEVERAGES

These articles should be handled with great care. If the food is in an open utensil, it should be covered to avoid contamination. Stressing this the Prophet (pbuh) said, *"Cover up the utensils and tie the mouth of the water skins"* (Bukhari and Muslim).

He also said, *"Why did you not cover the utensil carrying the milk even if it was with a piece of wood."*

DENTAL HYGIENE

Particular stress has been laid by the Prophet on this as it is very important in the prevention of disease. He attached great importance to the use of "Miswak" or a tooth brush. *"If I had not thought this to be an unbearable hardship for my followers I would have prescribed the use of Miswak before every prayers."* (Bukhari and Muslim).

According to modern dentistry the best method of using a Miswak or a tooth brush is up and down the length of the teeth, and this is exactly the way our Prophet used his Miswak.

KHILLALA

The blessed Prophet said *"Whosoever eats should pick bits and pieces from in between his teeth."*

It is a beneficial act so that the teeth do not rot and produce disease.

HEAT STROKE

Covering the head and neck as our Prophet used to do, mitigates the danger of hyperpyrexia which is brought about by an imbalance of the heat control center situated in the hind brain, which may lead to death.

TREATMENT OF FEVER

Death occurs if the temperature of the body exceeds 106° irrespective of the cause. Medically speaking the first line of treatment is to lower the temperature of the body by cold water, ice sponging or even immersing the patient in cold water. On this Prophet said: *"The fever is related to the Hell. Application of cold water keeps it away"* (Ibn Maja).

CONSTIPATION

The blessed Prophet advised that while defecating keep pressure on the left foot (Tabrani). In squatting position this maneuver will cause pressure on the descending colon. Medically this helps evacuation of feces from the descending colon thus relieving constipation, particularly when muscles of the abdomen are weak.

DISEASES OF DIGESTION

Several ahadith pertaining to this include:

"It is unbecoming to eat in the Bazar (Market)."

"Whosoever eats earth aid his death" (Tabrani).

"Use curry with food even if it is in the form of water" (Tabrani).

"Vinegar is a very good curry."

"The best curry is common salt."

Salt depletion through perspiration increases during summer, thus it is important to use common salt during this period.

Our Prophet liked pumpkin (one of the vegetables) as it is easily digested and less likely to produce flatulence.

He also said, *"It is not right to eat your food quickly, besides this one should eat from what lies nearest to one"* (Bukhari and Muslim).

EPIDEMIC PREVENTION

Hygiene is very important. Cleanliness prevents infection entering the citadel of the human body and this guards us against ill health and epi-

demics. God ordered our Prophet in Surah Al-Muddathir: *"O, Prophet keep your apparel clean and meticulously avoid filth and rubbish."*

Our Prophet said, *"God Almighty is himself pure and likes purity, God himself is clean and He likes cleanliness"* (Tirmidhi).

"God Almighty dislikes dust, dirt and disheveled hair."

"Avoid three things which are cursed: To urinate at the source of water, in the shade, in the pathways" (Ibn Maja).

"No one should pass water in standing water." (Bukhari, Muslim, and Abu Dawud).

"If any one of you yawns, he should cover his mouth with his hands" (Muslim and Abu Dawud).

One should avoid coughing, sneezing, yawning or laughing with fully open mouth near other persons as the exhaled air may spread bacteria in the atmosphere that may be conveyed to other persons.

STREET AND ROADS

Town planning should be based on broad and airy roads so that there is no obstruction to the flow of traffic and to avoid congestion which helps spread communicable diseases. Our blessed Prophet fourteen hundred years ago said *"Keep the breadth of the streets seven arms length."*

ACUPUNCTURE

This is mentioned in the authentic Hadith as an effective treatment for several diseases. Research is being done in China and other parts of the world to use acupuncture as a method of treatment.

There are other rules of medicine which have been dealt with in Islam, for example:

1. Quacks should not treat patients.
2. Treatment and prevention of disease have been recommended and practiced by the Prophet.
3. When you visit a patient do not stay long.

There are many priceless gems of knowledge in the Qur'an and hadith from which man can benefit immensely. These are but brief facts of medicine which are mentioned in the Qur'an and hadith long before they were discovered and studied by modern science.

SECTION C:

**CONTEMPORARY ISSUES IN MEDICINE AND
THE ISLAMIC PERSPECTIVE**

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES

HEALTH AND HEALING IN THE QUR'AN

Ahmed Elkadi, M.D.

"We reveal from the Qur'an that which is a healing and a mercy for the believers." (Qur'an 17:82)

This statement is a statement of fact, declared in the Qur'an and confirmed by the sayings and practices of Prophet Muhammad, (pbuh). The healing effect of the Qur'an is not limited to the ills of the society and the world. It extends to the human beings and contributes to his physical and mental health and well-being. The question is: How does the Qur'an heal? And how does it promote health and well-being?

The Qur'an achieves its healing and health promoting effect by utilizing three different approaches: the legal approach, the guiding approach, and the direct healing approach. The legal approach is through the provision of legislation prohibiting matters which are hazardous to health and enjoining matters which promote health. This legislation has a direct impact on the health of the individual. The guiding approach is through the provision of general rules and regulations which guide the individual in conducting his or her daily affairs. This guidance has an indirect positive effect on the health and well-being of the individual. The third approach is through the direct healing effect of the Qur'an on the various organs of the human body.

The first two approaches, the legislation and guidance, have been very much known and well understood for years, although some new discoveries have added an exciting twist in our understanding in these areas. The third approach, however, or the direct healing effect of the Qur'an on the organs of the human body is a completely new field of discovery where many new exciting facts are just beginning to emerge and get closer to the level of our understanding. Let us review these three approaches in some detail:

1. Legislation:

These examples of health promoting legislation will make the point. It should be made clear that this is not in any way an exhaustive listing of health related injunctions in the Qur'an.

- The most important legislation is probably the prohibition of kufr, or disbelief in God. The lack of recognition of God as the ultimate source of guidance, relief, protection, support, and sustenance can easily lead to anxiety, depression, and a host of other mental illnesses. It has also been recently discovered that mental stress and emotional instability lead to impaired immunity, which in turn reduces the body's ability to fight diseases such as infections and cancers. In a recent study, it was found that the incidence of a certain type of cancer was highest among atheists when compared to other groups that believe in God.

- Another legislation is the prohibition of alcohol consumption which is now known to increase the incidence of several cancers and inflammatory conditions of the alimentary tract, liver cirrhosis, pancreatitis, heart muscle damage, and various disorders of the central and peripheral nervous systems.

Other examples of prohibited matters include:

- excessive eating, which leads to excessive obesity, which carries a higher risk of cancer, coronary artery disease, high blood pressure, stroke, liver cirrhosis, and a variety of metabolic and endocrine disorders;

- sexual promiscuity, which leads to a high incidence of venereal diseases, several types of cancers, infertility, and a variety of inflammatory conditions;

- homosexual relations, which lead to a high incidence of cancers, infections, and the most frightening, Acquired Immune Deficiency Syndrome (AIDS);

- sexual intercourse during the menstrual period, which could lead to certain infections and inflammatory conditions;

- any matter which proves to be impure, bad, or harmful (*al-khaba'eth*). Cigarette smoking can certainly be included in this category with its known causative link to cancer of the lung and alimentary tract, bronchitis, emphysema, peptic ulcer conditions, and atherosclerosis (hardening of the arteries) with all its serious complications.

Examples of legislation enjoining health promoting matters include:

- prayers, which improve the physical condition of the musculo-skeletal and cardiovascular systems, in addition to controlling anxiety, depression, and other emotional problems;

- fasting, which helps in the alleviation of several peptic and metabolic disorders. Most recently, our research at the Akbar Clinic has also shown that Islamic fasting improves the immunity of the human body.

- ablution and bathing, which help in the reduction of occurrence or transmission of infections;
- breast feeding, which is now proven to be the best and most suitable nutrition for the developing newborn baby;
- and many other injunctions.

II. *Guidance:*

The basic description of the Qur'an is that it is a "guidance for mankind (hudan lin-nas). It contains teachings related to personal behavior, attitudes and dealings, guiding the individual in conducting his or her daily affairs. It also contains teachings which deal with general matters of the society and which lead to the achievement of general goals such as freedom, justice, and improved economic conditions. All of these lead to the making of a balanced, emotionally stable and successful individual who is able to make better decisions and realize better achievements in life. Such an individual will enjoy a much higher degree of well-being. As mentioned earlier, such an individual, with a better emotional set-up, will also have a better immune system, leading to a healthier physical condition.

III. *Direct Healing Effect:*

Since the time of its revelation, the Qur'an has been used by Prophet Muhammad (pbuh) and many of his followers as a direct healing modality by reciting it to the sick person. This is called "Ruqya". There were always many questions, however, regarding the nature of the healing power of the Qur'an.

How does the Qur'an achieve its healing effect? Is it achieved through its effect on the spirit and mind alone or does it have direct effect on the human body? Does the Qur'an act through the effect of its meaning on those who understand it or through the effect of the sound of its words on anyone who hears them? Does it work only on those who believe in it as the word of God or could it work on anyone, regardless of his or her faith? Which illnesses will be best affected by the Qur'an? Should the Qur'an be used by itself or should it be combined with other treatment modalities? And, how much of it should be used in each situation and for how long?

These and many other questions were the reason for the Qur'anic research program at the Akbar Clinic, which was started in the early part of 1984. The purpose of this research program is not to prove that the Qur'an is the word of God because we know it is; and it is not to prove that the Qur'an has a healing effect, because we know it does. The purpose of this research is to try to discover all or at least some of the details of the healing effect of the Qur'an so that it may be used as a regular treatment modality wherever applicable, and so that it can be presented as such to the medical community of the world. The research is still in its beginning stages, and

this paper will present the results available at present.

Nature of the Research During its First Three Stages:

Healthy volunteers were monitored for a variety of physiologic changes or responses while listening to recitations from the Qur'an.

Correlation Between Stress and the Monitored Physiologic Functions:

Stress leads to increased muscle tension with increased electrical activity, increased sweat production resulting in increased electrical conductivity of the skin and vasoconstriction resulting in decreased blood flow in the skin, as well as decrease in the skin temperature and increase in the heart rate. Reduction of stress leads to opposite changes, i.e. relaxation of muscles with decreased electrical activities, decreased sweat production resulting in decreased electrical conductivity of the skin, and vasodilation with improved blood flow in the skin, as well as rise in the skin temperature and decrease in the heart rate.

According to the available data, there is a definite and obvious stress-reducing effect of the Qur'an on the various organs of the body, possibly through the central and autonomic nervous systems. The specific physiologic changes achieved by the Qur'an vary from one organ to another. These include relaxation of skeletal muscles with reduction of the electrical potential in monitored muscles; reduction of sweat production with decrease of electrical conductivity of the skin; relaxation of smooth muscles in blood vessels with vasodilation and increased blood flow and perfusion in tested areas; as well as reduction of the heart rate and increase in the skin temperature. These were only the functions which were measured in these studies. It is assumed that equivalent responses can be detected in other organs if measured, since these effects seem to be all triggered through the nervous system.

These physiologic effects of the Qur'an are achieved through two mechanisms. One is through the meaning of the Qur'an for those who understand it, even if it is conveyed through a translation to those who do not understand the Arabic text. The other mechanism is through the sound of the Arabic Qur'anic words, produced in those who do not understand their meaning. Within the Qur'an itself, there appears to be a different effect of the different verses of the Qur'an, where there is more stress-reducing effect of verses promising reward (verses of *Targheeb*) and less stress-reducing effect of verses promising punishment (verses of *Tarheeb*).

The physiologic effects of the Qur'an which have been reported so far are all very basic and very real. The question may be asked: Is this all the Qur'an can do to the body? I feel that what we see now is only the tip of the iceberg, and is only the superficial manifestation of an otherwise much more profound effect on the human body. This is not to belittle the value

of the effects we were able to document so far. The listed effects on skeletal muscles, on the cardiovascular system, and stress in general could contribute to the healing of a large number of conditions related to spastic muscles, vasospastic disorders, or for that matter any condition, be it psychology or somatic, which is caused or aggravated by stress. However, I strongly feel that the matter is much more serious than that. There is good reason to assume that the Qur'an has a favorable effect on the immune system of the body. This assumption is based on an already known fact that prolonged stress leads to impaired immunity, possibly due to the production of Cortisol or some other neuro-endocrine mechanisms. Conversely, the relief or reduction of stress is expected to improve immunity, and the Qur'an is already known to reduce stress and other such symptoms. However, this assumed link between the Qur'an and improved immunity has to be proven, documented and standardized.

We should like to know whether it affects humoral immunity, or cell mediated immunity. How much of the Qur'anic treatment must be given in order to achieve such an effect, and how long will the effect last? These and many other questions will be the subject of the fourth stage of our Qur'anic research programs, insha'Allah. If such a favorable effect on immunity is found to be true and could be made available for practical use, it will have a far-reaching effect in the prevention and healing of so many diseases, including infectious diseases, many chronic disorders, and cancer.

The question will arise, could illnesses be completely eliminated if we utilized the Qur'an to the fullest extent? The answer is no! We may be able to deal with illnesses in a better way: physically by controlling them better, and mentally by tolerating them better.

After all, illnesses are also of some benefit to us! From an economic point of view, illnesses provide jobs for millions of health care professionals: doctors, nurses, aides, and all other support personnel. From a non-economic point of view, they provide a challenge to the afflicted person to see whether he will persevere, as well as to the treating person to see whether he will find the cure. Thus, illness may be viewed as a way of gaining forgiveness of one's sins, or as an investment to accumulate reward for the suffering one, or as an educational experience to make one feel how others suffer and to make one appreciate the blessings of good health.

At any rate, with the Qur'an, we can definitely deal with illness in a much better way. Indeed, in it there is healing and mercy for the believers.

BIBLIOGRAPHY

1. Elkadi, A.: Documentation of the Physiologic Effects of the Qur'an in Man Utilizing Biofeedback Monitoring Techniques: A Preliminary Study. Presented at the 17th Annual Convention of Islamic Medical Association of North America, St. Louis, Missouri, August 1984.

2. Elkadi, A.: Documentation of the Physiologic Effects of the Qur'an in Man Utilizing Biofeedback Monitoring Techniques: A Controlled Study. Presented at the Third International Conference on Islamic Medicine, Istanbul, Turkey, September 1984. Published in the proceedings of the same conference.

3. Elkadi, A.: Towards an Understanding of the Healing Effect of the Qur'an. Submitted for presentation at the 18th Annual Convention of Islamic Medical Association of North America, Niagara Falls, New York, July 1985.

HEALTH GUIDELINES FROM QUR'AN AND SUNNAH¹

Shahid Athar, M.D.

The Qur'an is not a book of medicine or of health sciences, but in it there are guidelines for health and treatment of diseases. Prophet Mohammed (pbuh) has been sent as an example to mankind, so his traditions in matters of health and personal hygiene are also a guide for his followers.

We start our discussion with the following verse:

"Everything good that happens to you (Oh man) is from God, everything bad that happens to you is from your own actions" (Qur'an 4:79).

Pathology (disease) is defined by the famous pathologist William Boyd as "physiology (natural state) gone wrong." It is our tampering with the natural process that leads to unnatural outcomes.

The human body can be compared to some degree to a machine created by man. The fascinating tape recorder has many mechanical, and electronic parts but life does not come to it till electrical current is passed through it. Similarly, in the components of the human body, there are not only the anatomic parts and fluids but also the spirit (the soul). As the care of a machine requires keeping it clean, giving it some rest, an electric current of proper voltage, and using it carefully and wisely, so are the requirement for the body and of the body as whole.

Before we come to the physical care of human body, let us talk about the spiritual care.

The spiritual care involves acts of worship; *Iman* cannot be equated with mere belief, nor *salaat* with prayer, nor *wudu* with washing hand, face and feet nor *sawm* with fasting nor *zakat* with charity nor *hajj* with pilgrimage to Mecca. They are entities in themselves.

- A. *IMAN*: The belief in God is the first and foremost need for spiritual stability. Belief in God includes belief in all His attributes, His

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angels, His books, the Day of Judgement, the heaven and hell and belief that - all good and bad is within His reach. In illness, according to Iman Ghazali, the awareness of God increases and man becomes closer to God by realizing his own weakness.

Without true belief, neither our prayer, nor charity, nor fasting nor pilgrimage will be accepted.

The essence of belief is to rid ourselves of all false gods around us, or within us, and to worship no one except God alone.

B. *SALAT*: There are three health aspects of salat

1. *Wudu*: Washing all the exposed areas of the body, hands feet, face, mouth, nostrils, etc., five times a day is a healthy preventive procedure. Hand washing is emphasized more and more in hospitals now in order to prevent the spread of germs. Muslims were ordered to do so in the Qur'an (5:7) 1400 years ago. And for complete cleanliness bathing is advised (4:43)

2. *Recitation* of the Qur'an: It has a healing effect on the body, the mind and the heart. These healing effects are due to the effect of sound (echo) and the meaning on an individual. The letter *alif* resounds unto the echoes to the heart and the letter *ya* resounds unto echoes to the pineal gland in the brain.

"O mankind! There has come to you a direction from your Lord and a healing for the (disease) in your hearts - and for those who believe a guidance and mercy!" (Qur'an 10:57).

"We sent down in the Qur'an that which is healing and a mercy to those who believe: to the unjust it causes nothing but loss after loss" (Qur'an 17:82).

3. *Physical Exercise*: The movements in salat are mild, uniform, and involve all muscles and joints. The caloric output helps keep the energy balance. Each raka' uses twenty calories.

C. *Zakat (charity)*: The word itself means purification and growth. Here it is meant to imply the purification of legitimately earned wealth. Many of our crimes are committed with money or for love of money, and the love of money can cause violence in behavior.

"And (man) is violent in his love of *wealth*." (Qur'an 100:8).

In Islam the ownership of wealth belongs to God. We are the deposers of that trust. It gives us peace of mind and helps us behave properly no matter whether gain or lose materially. In either case, we are thankful to God.

D. *Sawm* - The Islamic Fasting: Islamic fasting is prescribed as a way of training our mind and body in self-restraints.²

² See Therapeutic benefits of Islamic fasting, Islamic Horizons, May 1984 and May 1985.

"O you who believe fasting is prescribed to you, as it was prescribed to those before you, so that you can learn self-restraint" (Qur'an 2:183).

Therefore, during the period of fast one may not only rid of the habit of constantly nibbling food, drinking coffee, smoking, but also of anger and excessive sexual indulgence.

In fact, fasting not only gives rest to the stomach but also stabilizes the secretion of hormones which control our behavior.

- E. *Hajj (Pilgrimage to Mecca)*: The moral behind this act is Prophet Ibrahim's submission and absolute surrender to God's will. It provides the opportunity for repentance, and the social and political gathering of the ummah depicting brotherhood and equality. However, this can be used for programming and testing us for physical endurance, a requirement for all able men and women. The long walks, the heat, the sun, the thirst, the physical exercise, etc. is to remind us of the Day of Judgement. We should perform hajj when young and physically well rather than wait till old age. We should keep ourselves in good shape before and years after the hajj.

After describing the pillars of faith as a basis for spiritual health, let us consider the maintenance of the physical structure in which the spirit resides.

- (A) *Nutrition*: Allah loves His creation so much that he is concerned even with what we eat and put in our bodies. Our muscles, bones, lungs, liver, brain and secretions are made from the raw product we eat. If we provide the body with junk raw products, it will not produce tough bones, strong muscles, a good pump (heart) and clean pipes (vessels).

"O you mankind! Eat of what is lawful and good on earth" (Qur'an 2:168).

"Eat of the things which God has provided for you lawful and good, but fear God in whom you believe" (Qur'an 5:91). Forbidden to us are dead meat, blood and flesh of swine (Qur'an 5:4) and intoxicants (Qur'an 5:93 and Qur'an 2:219).

The blood and meat of the dead animals could be full of germs and other harmful elements like antibodies. Pork is high in cholesterol, salt and may have worms, and alcohol and other intoxicants cloud our mentation, our inhibitions and interfere with our normal capacity of judging good and bad.

The second component in nutrition (after permission of the lawful and prohibition of the unlawful) is moderation of the lawful.

Obesity is a major American problem, a form of malnutrition, affecting million of people, of all age. 99% of obesity is due to overeating. Allah

advises as to be moderate in consumption. "But waste not by excess for God loves not the wasters" (Qur'an 7:31).

"Eat of the good things we have provided for your sustenance, but commit no excess therein, lest my wrath should justly descend on you, and those whom descends my wrath do perish indeed" (Qur'an 20:81).

The Prophet Mohammed (pbuh), advised us to leave one third of our stomach empty when taking our meals.³

Certain types of food i.e. are especially emphasized in the Qur'an (36:57, 43:73, 16:67, 50:68)

"And (from) the fruits of date palm and grapes you get wholesome drink and nutrition: behold in this is also a sign for those who are wise" (Qur'an 16:67).

Fruits are low in calorie, high in vitamins and minerals, fiber. Fruits have fructose not sucrose. In a recent study by Dr. Anderson, fructose has been found to cause no rise in blood sugar; rather it was found to lower the high blood sugar of diabetics. (Honey is fructose.)

(B) *Cleanliness*: Allah is pure and likes purity. He is clean and likes cleanliness. Therefore, cleanliness of body and mind is stressed in Qur'an (4:43, 5:7). Miswak (brushing teeth) is not a new invention of the last 200 years. This was stressed as part of our daily routine by Prophet Mohammed (pbuh). He also advised us on flossing (khilal) as is now being advised by modern dentists. In fact, he is known to have said that if he were not afraid to cause hardship for his followers, he would have advised them to brush their teeth before each prayer i.e. 5 times a day. Cleanliness of our mind is prerequisite for total cleanliness (body and mind).

C) Value of Exercise in Maintaining Health

Though we do not find much in the Qur'an about specific exercises, the Prophet's (pbuh) life provides ample recommendations. He advised Muslims to teach their children swimming, archery and horse riding. He, himself used to walk at a fast pace and, on two occasions at least, even raced with his wife, Ayesha (RA). Most importantly, he used to work with his hands whether at home, in the kitchen, or with his companions collecting wood for fire, or fighting against the enemies.

It is a pity that Muslim men and women have become sedentary, and because of excessive consumption of starches, obesity has weighed them down. A Muslim, man or woman, should always keep themselves fit physically to strive in the cause of Allah, in peace or war.

³I broke my blender/mixer in the kitchen after stuffing it to the top and then turning the machine on. After all, what is a stomach, if not a blender, grinder, mixer and food processor, all in one!

The State of Disease

Many of the common chronic illnesses, coronary heart disease, hypertension, diabetes, peptic ulcer disease, obesity and depression have also common man-made etiology, that is rich food, too much food, too much salt, too much sugar, smoking, stress and alcoholism. If we give up excessive salt, sugar and cholesterol from our diet, and do not drink and smoke, and be active, it is possible that - the heart won't be worn down from inside.

WHAT SHOULD A MUSLIM DO WHEN DISEASE IS CONFIRMED?

A. Accept it as a will of God as *kaffara*⁴ for his sin, and ask Him to remove the affliction.

"If God touches thee with affliction, none can remove it but He: If He touches thee with happiness He has power over all thing" (Qur'an 6:17).

B. Many Muslims won't seek early medical attention, contrary to the Prophet's practice and teaching.

Usamah bin Shareek (RA) reports "I was with the Prophet (pbuh) and some Arabs came to him asking 'O Messenger of Allah, should we take medicine for disease'. He said, "Yes, O you servants of Allah take medicine as Allah (SWT) has not created a disease without creating a cure for it except for one. They asked which one, he replied "old age".

C. Increase your knowledge of health and disease, of medications and side effects. This knowledge is not a monopoly of doctors. You can have it, and use it in preventing illness, recognizing it early when symptoms appear, seeking early medical attention, then monitoring the course of disease, implementing the treatment (i.e. knowledge of diet for diabetics) and recognizing side effects of the medicine.

In summary, our healthy body is a gift from God, we are the trustees, we should not misuse it, nor provide wrong raw material for our bodies. We should maintain this delicate and sensitive machine, in superb condition to really enjoy Allah's blessings in this life!

⁴Kaffara: Atonement for one's sins.

THE HOLY QUR'AN AND THE PSYCHE

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Throughout of the Holy Qur'an the Arabic word 'Al-Nafs' is repeatedly mentioned. Its sense depends upon the structure of the verse. Among which the intended meaning is the sense of 'psyche' or 'mind'.

Direct or indirect reference to other psychological matters such as 'Instincts, Id, Ego, and Super-ego' are also found in the Qur'an. This made us explore as much of the psychodynamic assumptions and concepts as possible and to present it here briefly. We hope this would motivate the students of dynamic psychology to use this information in their research and explore fresh psychological realms, and provide answers to the insoluble mysteries of the psyche in its psychological context.

Method

The Holy Qur'an contains 143 verses that encompass the Arabic word 'Al-Nafs'. All these verses were analyzed to extract the various meaning of the word.

The word 'Al-Nafs' referring to the mind or psyche is found in 28 verses.

These have received special attention in this study. Few of these verses were quoted for the purpose of this study. A brief definition of the psychodynamic concepts: Psyche, Id, ego and super-ego have also been given.

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Discussion

The word 'psyche', according to the Oxford dictionary, means the spirit, soul or mind. Thus it corresponds with the Arabic word 'Al-Nafs' and its various senses. Here we give few examples of such verses:

1. "Nor need I swear by the self-accusing soul" (Qur'an 75:2).
2. "O thou comforted soul return into thy lord, well-pleased and well pleased with" (Qur'an 89:27-28)
3. "Verily, every soul has a guardian over it" (Qur'an 81:4)

It is also useful here to mention a few verses in which the word Al-Nafs conveys the sense of the individual or person: these verses however were not included.

4. "But no soul shall earn aught save against itself" (Qur'an 6:164).
5. "And kill not the soul, which God hath forbidden save by right" (Qur'an 6:151).
6. "Said she, 'My Lord' verily, I have wronged myself..." (Qur'an 27:44)

The 'instinct' is defined as an inborn condition which imparts direction to psychological processes. The sex instinct, for example, directs the psychological processes of perceiving, remembering and thinking toward the goal of sexual consummation (Hall, 1954). No special mention is made of the word instinct in the Holy Qur'an directly while it has been pointed to as a component of the instinctual built of the psyche in a number of verses:

7. "Yet I do not clear myself, for the soul is very urgent to evil" (Qur'an 12:53). A pleading of inability to resist such instinctual drive.
8. "Had we pleased we would have given to every soul its guidance" (Qur'an 32:13). It points to the fact instincts can be channeled into another direction.
9. "For thus my soul induce me" (Qur'an 20:96).

That is to say such instinctual impulses drove me to behave so. Freud's concept of personality is that it consists of three provinces: the 'Id', 'Ego' and 'Super-ego'. These operate and interact with each other and with the environment. When they form a unified harmonious organization, the person is 'mentally healthy'. The person is said to be maladjusted when these systems are not working coordinately (Hall, 1954).

The 'Id' is a latinized derivation from Groddeck's (1928) 'das Es' (The It). It is held to be the reservoir of psychic energy or libido and is fully developed at birth. It is also described as amoral, egocentric, ruled by the pleasure-pain principle and considered as the seat for the instincts (Sim, 1974). Here, again, we ought to point out that though there is no particular

mention of these 3 constructs in the Holy Qur'an, the evidence which point to them are ample, especially the verses that deal with 'Id':

10. "And the self, and how it is formed in accordance with what it is meant to be, and how it is imbued with knowledge of its wrong and its right" (Qur'an 89:7-8).

It means that the Id is born with the individual and that every individual is equipped with good and bad instincts. At the same time it has been stated in other verses, that the instinctual character of the 'Id' may be modified or molded as in the following verse:

11. "But as for him who feared the station of his Lord, and prohibited his soul from lust, verily, paradise is the resort!" (Qur'an 79:40).

Here, also behavioral approach towards the person (reinforcement of good intentions) is evident. This verse is one example that contains various psycho-social points which include:

1. Social approval of good behavior
2. The 'Instinctual' characteristic of the 'Id.'
3. 'Instincts' which can be modified by the 'Super-ego' (fear of God).
4. Behavioral method of approach, that is to say, the incentive for good behavior is heaven (The technique of 'positive reinforcement').

Moreover, the following verses also point to the 'Id' and its instinctual characteristics.

12. "Yet I do not clear myself, for the soul is very urgent to evil" (Qur'an 12:53).
13. "Whatever evil happens to you, is from your own soul" (Qur'an 4:79).
14. "And thus did my soul suggest to me" (Qur'an 20:96).
15. "And the self and how it is formed in accordance with it is meant to be, and how it is imbued with knowledge of its wrong and its right" (Qur'an 89:7-8).

External forces can influence the 'Id' and mould it in any shape as in this verse:

16. "Had we pleased we would have given to every soul its guidance" (Qur'an 32:13).

The 'Id' impulses are modified by the 'Ego' which tests reality and deals directly with the external and internal environment. The 'Ego' is considered as largely conscious, logical and possessing moral standards (Hall, 1954; Sim 1914). From the following verses reference to the 'Ego' can be verified:

17. "For no soul shall be obliged beyond its capacity" (Qur'an 2:233).
18. "God will not compel any soul beyond what He has given it"

(Qur'an 65:7).

These verses point to the defined capacity and the threshold of tolerance of the 'Ego.'

The following verse refers to the Ego and Super-ego as well:

19. "And every soul shall come with a driver and a witness!" (Qur'an 50:24).

The driver here corresponds with the freudian 'Ego' and the witness with the super-ego. The Ego's defence 'projection' which prevents the Ego from disintegration is obvious in the following verse:

20. "Nor need I swear by the self-accusing soul" (Qur'an 75:2).

Another psychological description of the Ego appears in this verse:

21. "O Thou comforted soul..." (Qur'an 89:27).

In the following verse we find an indication of obsession traits:

22. "But we created man, and we know what his soul whispers" (Qur'an 50:16).

The 'Ego' is influenced by the 'Super-Ego' which is the moral or judicial branch of personality. The 'Super-Ego' is primarily considered unconscious. It is the moral monitor which is responsible for the sense of guilt and a consequence of a child's assimilation of his parent's standards (Hall 1954, Sim 1974). The 'Super-Ego' received no less attention and is clearly demonstrated in the coming verses:

23. "And the self, and how it is formed in accordance with what it is meant to be, and how it is imbued with knowledge of its wrong and its right" (Qur'an 89 7-8).

This means here that every person is born with two conflicting powers; the power of 'Id' which is bad and the power of the 'Super-Ego' which is good. The 'Super-Ego' can influence the impulsiveness of the 'Id' as in this verse:

24. "But as for him who feared the station of his Lord, and prohibited his soul from lust, verily, Paradise is the resort!" (Qur'an 79:40).

A demonstration of how the 'Super-Ego' acts as a Supervisor is shown in this verse:

25. "Read thy book, Thou art accountant enough against thyself today!" (Qur'an 17:14).

We already have mentioned the following verse which engulfs the 'Super-Ego'

26. "And every soul shall comewith a driver and a witness" (Qur'an 50:21).

The witness here is the 'Super-Ego'. The same thing applies to this verse:

27. "Verily, every soul has a guardian over it" (Qur'an 81:4).

This is a mere presentation of a fact, which if neglected before, would attract attention. We are at the threshold of the immense realm of psychology and the allied sciences in the Holy Qur'an. We hope those interested in this particular field will explore other aspects of the 'self.'

References

1. Abdul-Baqi, M.F. (1945) The indexed Dictionary of the Names in the Holy Qur'an (Arabic) pp. 710-12 (Beirut).
2. Brown, J.A.C. (1961) Freud & the Post Freudian, pp. 28-29, 68-75, Penguin book, (London).
3. Groddeck, G.W. (1928) the book of the IT. New York: Nervous & Mental Diseases Publishing Copy.
4. Hall, C.S. (1954) A primer of Freudian Psychology. pp.22-49, A mentor book, The New American Library, New Jersey.
5. Palmer, E.H. (Trans.) (1954) The Qur'an., Oxford University Press, London.
6. Rodwell, L.M. (Trous.) (1933) The Koran, pp. 1-18, J.M. Dent & Sons LTD, London.
7. Sim, M. (1974). Guide to Psychiatry, 3rd ed., pp. 32-33, Churchill Livingston, Edinburgh & London.

ISLAMIC PERSPECTIVE IN STRESS MANAGEMENT¹

Shahid Athar, M.D.

While stress may be necessary for human survival, the excess of it certainly affects our health and productivity. It is claimed that in the United States nearly 20 million people suffer from stress in terms of attributing their illness or symptoms to it. Stress related compensation cost nearly \$200 million per year. Loss of productivity and stress related illness directly or indirectly amounts to \$50 billion per year. Many corporations and individuals are spending nearly \$15 billion per year on stress management of their employees. (Newsweek 4-25-88).

There is enough medical evidence to link stress to the causation of peptic ulcer disease, hypertension, coronary artery disease and depression. In addition, many common problems like tension headache, insomnia, impotency (in men), frigidity (in women), are stress related. There is now some evidence to suggest that stress is also related to causation of diabetes, suppression of immune system and development of cancer.

In our day to day life, stress affects peace at home, job performance at work, grades in school and even our eating and mating behavior.

Warning Signs Of Stress

The earliest warning signs of stress are irritability, mood swings, difficulty in sleep, fatigue, lack of concentration, abdominal distress, extreme sensitivity to criticism, weight gain or weight loss, fear of failure, poor appetite, or hunger, and increase dependence on tranquilizers or alcohol for sleep.

Conditions Which Cause Stress

Psychiatrists have identified some 50 stressors. In fact any change,

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good or bad, is stressful. A change in job, or job description, in school, residence, financial status, loss or gain of a family member or close friend, injury or illness, national calamity or news of riots or violence all can be extremely stressful. Muslims living in a non-Muslim society may acquire some additional stress. These may include such factors as preserving their identity, practicing Islam (i.e. in food matters or timing of prayer), defending Islam on a hostile media and settling conflicts between family members: the spouse, parent / child, and practicing / non practicing factions.

Who Are Prone To Stress

Although stress spares no one including children, certain professions get more than their share. They include the sales person, the stock broker, the secretary, the inner city school teacher, the air traffic controller, the medical intern, the police officer and those handling complaint departments. It is interesting to note that qualities like being ambitious, compulsive, high achieving, productivity oriented are looked upon as signs of efficiency by the employer, are also the type A personality traits, so dangerous to our health. So the art is to have these qualities, with a cool type B personality in order to live happily and have a longer time.

Coping With Stress

Although we are all exposed to stress, why can some of us cope with it better than others? Is it the way we deal with the stressor, or the way we are built? There is some evidence to suggest that some of us may be genetically predisposed to depression, or have deficiency in the level of neurotransmitters, the mood regulating hormones, or just do not produce enough adrenalin on demand.

A person's religious belief has an important bearing on his personality and his outlook in life. By putting the trust in God, a believer minimizes the stress on him by reducing his responsibility and power to control his failures.

Proven ways to handle stress as being practiced now range from meditation, sleep, exercise, socialization, biofeedback, psychotherapy and tranquilizers. In this article we are going to discuss how to deal with stress in the light of the Qur'an and the Sunnah.

Psychologically the stress results from the following factors.

- a. Fear of the unknown, and our inability to recognize, foresee and control it.
- b. Loss of things, and people in our life dear to us, and our inability to recover these losses or accept them.
- c. Our inability to see through the future. In fact we might be more stressed if we do see the future.
- d. Conflicts between the mind, and the reality and our failure to accept

the reality (i.e. the phase of denial). It is the lack of the inner peace due to our internal conflicts which leads to the external disturbances in our behavior and affects our health.

Let us examine how the Qur'an deals with such situations. Our losses are a part of trial for us:

"Be sure We will test you with something of fear and hunger, some loss in goods or lives, but give glad tidings to those who are steadfast, who say when afflicted with calamity: To God we belong and to Him is our return. They are those on whom (descend) blessings from God and mercy and they are the ones that receive guidance". (Qur'an 2:155)

Whatever we are given is a gift from God. We are not their owners. Everything belongs to God and returns to Him. So if we don't own these things why mourn their loss or wax proud on receiving them.

a. Only God knows what our ultimate destiny is. We cannot peek into our future. We do, however, have a limited free will; we are free to choose between good or bad, to believe in God or not to believe in Him, but we have no control over future not related to our ability to act in the present—whether my wife will have a son or daughter, whether his / her eyes will be brown or black, or whether I will have an accident tomorrow or not. Worrying over such things is of no use.

b. Rejection of faith in the Qur'an is described as a disease, its cause being arrogance and reluctance to accept truth.

"In their heart there is a disease and God has increased their disease and grievous is their penalty because they lie to themselves". (Qur'an 2:10)

Thus when a man lies to himself, he creates an inner conflict - between the heart and the mind. In order to contain that conflict, the mind sends signals to glands for secretion of hormones like adrenalin which leads to rapid heart rate, perspiration, tremor, the basis of a lie detector test.

This conflict could be due to "small" crimes like theft or adultery, or big crimes like rejection of God.

Three Stages Of Spiritual Development Of Soul Age

a. *Nafsul Ammara: The Passionate Soul*

"I do not absolve myself. Lo the (human) soul is prone to evil, save that whenever my Lord has mercy. Lo, my Lord is forgiving; merciful". (Qur'an 12:53)

This soul inclines toward sensual pleasure, passion and self gratification, anger, envy, greed, and conceit. Its concerns are pleasures of body, gratification of physical appetite, and ego. In a hadith we are told, "Your most - ardent - enemy is your evil self which resides within your body". (Bukhari)

If this evil soul is not checked, it will lead to unusual stress and its resultant effects.

b. *Nafsul Lawammah: The Reproaching Soul*

"Nay, I swear by the reproaching soul" (Qur'an 75:1)

This soul is conscious and full aware of evil, resists it, asks for God's grace and pardon, repents and tries to amend and hopes to achieve salvation.

"And (there are) others who have acknowledged their faults. They mix a righteous action with another that was bad. It may be that Allah will relent toward them. Lo Allah is relenting, merciful". (Qur'an 9:102)

"There are two impulses within us. One, spirit, which calls towards good and confirms the truth. He who feels this impulse should know that it comes from Allah. Another impulse comes from our enemy (devil), which leads to doubt and untruth and encourages evil. He who feels this should seek refuge in Allah from the accursed devil" (Hadith).

This soul warns people of their vain desire, guides and opens the door to virtue and righteousness. It is a positive step in spiritual growth.

c. *Nafsul Mutma'innah: The Satisfied Soul*

"O (you) soul in (complete) rest and satisfaction. Come back to your Lord, well pleased (yourself) and well pleasing unto Him. Enter you then among My devotees, enter you in My heaven". (Qur'an 89:27-30)

This is the highest state of spiritual development. A satisfied soul is in the state of bliss, content and peace. The soul is at peace because it knows that in spite of its failures in this world, it will return to God. Purified of tension, it emerges triumphant from the struggle and resides in peace and bliss.

What Should We Do In Panic And Despair?

In panic situations non-believers behave differently from believers. They have no one to turn to, to ask for mercy and forgiveness, they know and believe not in any life other than this worldly life, over which they have no control. Naturally they get more depressed which in turn leads them to even more wrong doing. If they were used to casual drinking, after drinking, they will increase their consumption of alcohol and end up as alcoholics or habitual criminals.

In a state of depression a believer, on the other hand, is advised to do the following:

a. Increase *Dhikr* (remembrance of God).

"He guides to Himself those who turn to Him in penitence-Those who have believed and whose heart have rest in the remembrance of God. Verify in the remembrance of God, do hearts find rest". (Qur'an 13:27-28)

b. Be constant in their prayers.

"O you who believe, seek help with steadfastness and prayer. For God is with those who are steadfast". (Qur'an 2:153)

c. Pray to God for Forgiveness.

"And I have said: Seek forgiveness from your Lord. Lo He was ever forgiving". (Qur'an 71:10)

In addition to the above believers are also expected to constantly struggle to better ourselves.

"Surely God does not change the condition in which people are until they change that which is in themselves". (Qur'an 13:11)

Qur'anic Recitation In Reducing The Stress

"O mankind! There has come to you a direction from your Lord, and a healing for (the disease in your) heart, and for those who believe a guidance, and mercy. (Qur'an 10:57)

The echo of sound has a medical effect, and is now widely utilized. The recitation of Qur'an or listening to the same has a wholesome effect on the body, the heart and the mind. It is said that the letter 'alif' echoes to the heart and letter 'ya' echoes in the pineal gland in the brain. Dr. Ahmed El Kadi of Akbar Clinic, at Panama City, Florida, conducted and has published the effects of listening to the Qur'anic recitation on physiological parameters i.e. the heart rate, the blood pressure and the muscle tension and reported improvement in all, irrespective of whether the listener is a Muslim or non-Muslim, Arab or non-Arab.² Obviously it can be postulated that those who can understand and enjoy the recitation, with a belief in it as word of God, will get maximum benefit.

Prophet Muhammad's (pbuh) Prayer During Stress

All the prophets, being human beings, had to undergo tests and trials which resulted in temporary stress. They constantly remembered God and recieved peace through His remembrance. The Prophet Muhammad (pbuh), for example, himself used and advised his followers to use the following D'ua (prayer) in times of distress.

- "Allah is sufficient for us, and He is an excellent guardian, and we repose our trust in Allah."

- "Surely we belong to Allah and to Him shall we return. O Allah, I beseech you for the reward of my hardship. Reward me, and compensate me for it with something good."

²For details, please refer to Dr. Ahmed El-Kadi's article on this subject in this book.

ISLAM AND THE SPIRITUAL WELL-BEING OF MAN³

Dr. Dawud Assad

Islam is a comprehensive way of life, and comprehends all walks of human activity — religious, spiritual, moral, ethical, temporal, social, physical, economic, political and intellectual. They all interrelate and interact, and one cannot isolate any one of them from the other.

The correlation between the physical and spiritual health and the well-being of man is a well known fact. The diseases known as "psychogenic" or "psychosomatic", human their origins in the "psyche" or in the mind. They are caused by mental or emotional conflict. We all know that extreme anxiety and stress can cause a man ulcers, or high blood-pressure or heart attack. They are examples of diseases of the body caused by the mind. Conversely, there are clinical cases in which the diseases of the body are known to have been cured by the mind - by positive thinking - as it is called in this country. In other words, the well-being of a man depends upon his attitude. There are healthy attitudes and there are unhealthy attitudes toward life, and an individual life and performance is affected by his attitude in life.

Man is created for a higher purpose. His body is earthly, but his spirit is lofty and divine. Man is here for a noble objective and a specific mission. The Qur'an says:

"I (God) have only created jinns and men, that they may serve Me" (Qur'an 51:56).

The well-being of the human soul is of prime importance, not only by reason of knowledge, acquired and intuitive, but also by reason of control exercised by it over other organs of the body. Its impact extends, in some

³This article is based on a speech delivered at the First Islamic International Medical Congress and the 14th Annual Convention of Islamic Medical Association of North America in Orlando, Florida on December 30, 1981

cases, to others as well, e.g., when we pray for a sick man's recovery, and he recovers.

Islam lays great emphasis on the spiritual welfare of man. It made the five prayers mandatory for the Muslims. Prayer or Sala't is a distinctive feature of the Muslim society. A Muslim is distinguished from non-Muslims by his observance of the mandatory prayer which brings him, at least five times a day, into the presence of his Creator. In fact, there is never a time when a Muslim is not in the presence of his Creator. This keeps alive the realization in his mind that whatever he does - good or bad - is known to his Creator which acts as a "shield" that protects him from all "diseases of the soul."

Prayer for a Muslim is a form of refreshment and a moral-spiritual renewal. It's restful and deeply enriching. Through prayer, the dead-end, materialistic elements in him give way to the revitalizing currents of spirituality which in turn, lift him to high levels of thought and action. To feel God's presence is the most refreshing experience a Muslim can have. Through prayer, he can beat the commotion of materialism, the fears and frustrations in life.

But as important as prayer is in Islam, it will not guarantee a man's salvation without good works. A man's aim should be to live an uncontaminated life, and as much as possible, in closeness to Allah. But he cannot go out of society, nor can he distant himself from others. He cannot go into "retirement" from life. He must become and remain a vital resource for the community. Allah must be known to him in experience - and not just by words or theory.

How do we become aware of the presence of Allah in our lives? One way is to become "involved", involved in making this world a better place for all people. The aim of the life of a Muslim should be to make this world a place in which there would be no tyranny, no oppression, no exploitation, and no abuse of power.

Islam's real aim is to create a society in which all men and women live in obedience to the laws of Allah as He revealed them to His messenger, Mohammed. The hallmark of that society would be justice; there would be no oppressors and no oppressed; no exploiters and no exploited; no tyrants and no victims. In that society, there would be no distinctions between men on the grounds of wealth, race, color, nationality or even education. The only standard to judge the quality of men and women is that society would be their character, their piety.

Earlier, I said that the program of Islam is comprehensive. The economic component of its program is very important and is linked with the components of its program for the spiritual well-being of man. The economic system of Islam guarantees economic and social justice to each and all. Economic and social justice, in turn, guarantee the spiritual well-being

of man.

Both Karl Marx and the exponents of capitalism failed to take into account the moral factor in man; They lack "Moral Consensus". The unrest witnessed in the world today represents, in part, a loss of faith in what are decided as the traditional values of life. True and lasting peace cannot be achieved without restoration of the Moral and Spiritual Consensus.

Islam recognizes that man, in order to be successful, happy and productive in a group, must be motivated by a higher moral sense rather than consideration of pay checks and conditions of work.

Islam also considers the role of education as a means of fostering the growth of individuals, because education will "lightens the darkness" of the world, and it "liberates" man from the tyranny of superstition.

In Islamic spiritual experience, happiness, the ideal of every human being, is necessarily linked with the knowledge of God. The noblest function of the human soul is the perception of Truth. A part of this perception of truth is the knowledge of our physical body and its functions.

If we think of our body as a horse, then the soul is its rider or a driver. A man who does not know his own soul-the nearest thing to him-how can he know anything else?

A man who neglects his soul and allows its capacities to rust or to degenerate, will be the loser in this world and in the next. The Holy Qur'an says:

"Those who were blind in this world, will be blind in the Hereafter, and most astray from the path" (Qur'an 17:72).

Well-being of man involves two things: first, the protection and nurture of his soul, and second, the care and nurture of his body.

The proper nourishment of the soul is the knowledge and love of God. The body is simply a vehicle for the soul and perishes while the soul lives on. Both the body and the soul must be restrained by the Divine laws as recieved through God's messengers.

The spiritual well-being of a man thus hinges upon his obedience to Allah, and compassion to other creatures of Allah. The first is symbolized by prayer (salat), and the second in service. A true Muslim not only obeys Allah, but also strives for the welfare of others.

MEDICAL ASPECTS OF ISLAMIC FASTING⁴

Shahid Athar, M.D.

There are close to 900 million Muslims in the world, including about 8 million in the North America. The majority of them observe total fasting (no food or water) between dawn to sunset in the month of Ramadan. They do so not for losing weight or any medical benefit, but because it is ordained in their Holy Book the Qur'an which says:

"O you who believe! Fasting is prescribed to you, as it was prescribed for those before you (i.e. Jews & Christians) so that you may (learn) self-restraint" (Qur'an 2:183).

According to Islamic Laws, children below 12, sick patients, travellers, and women who are menstruating or nursing a baby are exempt from fasting. In addition to staying away from food or water for the whole day, they are asked to stay away from sex, smoking or misconduct during the period of fast. In addition, they are encouraged to do more acts of piety: prayer, charity, or reading Qur'an during this month.

Food is needed by the body to provide energy for immediate use. This is done by burning up carbohydrates, that is, sugar. Excess of carbohydrates which cannot be used is stored up as fat tissue in muscles and as glycogen in liver for future use. Insulin, a hormone from the pancreas, lowers blood sugar and diverts it to other forms of energy, storage, that is, glycogen. To be effective, insulin has to be bound to binding sites called receptor. Obese people lack receptors; therefore, they cannot utilize their insulin. This may lead to glucose intolerance.

When one fasts (or decreases carbohydrate intake drastically), it lowers one's blood glucose and insulin level. This causes breakdown of glycogen from liver to provide glucose for energy need and breakdown of fat from adipose tissue to provide for energy needs.

⁴ Published in *Hamdard Medicus*, Volume XXXI, Oct. 1988 and *Islamic Horizon*, 1984, 1985.

On the basis of human physiology described above, semi-starvation (ketogenic diets) (1-5) have been devised for effective weight control. These diets provide calculated amount of protein in divided doses with plenty of water, multivitamins, etc. These effectively lower weight, blood sugar, but, because of their side effects, should be used only under supervision of physicians.

Total fasting reduces or eliminates hunger and causes rapid weight loss. In 1975, Allan Cott in his *"Fasting as a Way of Life"* noted that "fasting brings a wholesome physiological rest for the digestive tract and central nervous system and normalizes metabolism." It must be pointed out, however, that there are also many adverse effects of total fasting. That includes hypokalemia and cardiac arrhythmia associated with low calorie starvation diets used in unsupervised programs.

Studies On Islamic Fasting

Dr. Soliman, from the University Hospital, Amman, Jordan (ref. 8) has reported that during the month of Ramadan 1404 AH (June-July, 1984 AD) healthy Muslim volunteers; 42 males and 26 females, ranging in age from 15-64 and 16-28 years respectively were studied. They were weighed and their blood levels of cortisol, testosterone, Na, K, urea, glucose, total cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL), triglycerides (TG) and serum osmolality were measured at the beginning and at the end of Ramadan. There was significant loss of weight in males from a mean of 73.8 \pm 6.2 kg to 72.0 \pm 7.1 kg (P less than 0.01) and in females from 55.2 \pm 4.8 to 54.6 \pm 4.2 kg (P less than 0.05). Blood glucose levels rose in males from 77.7 \pm 23.6 mg/dl to 90.2 \pm 31.2 mg/dl (P less than 0.05) and in females from 76.0 \pm 7.6 mg/dl to 84.5 \pm 11.1 mg/dl (P less than 0.002). All other parameters did not show significant changes.

Dr. F. Azizi and his associates (ref.9) from the University of Medical Sciences, Tehran, Iran has reported the following. Serum levels of glucose, bilirubin, calcium, phosphorus, protein, albumin, FSH, LH, testosterone, prolactin, TSH, T4, T3, and T3 uptake, as well as prolactin and TSH responses to TRH were evaluated in a group of nine healthy men before and on the 10th, 20th, and 29th days of Ramadan. Mean body weight decreased from 65.4 \pm 9.1 to 61.6 \pm 9.0 kg at 29th day. Serum glucose decreased from 82 \pm 4 mg/dl on the 10th day, and increased thereafter (76 \pm 3 and 84 \pm 5 on the 20th and 29th days of fasting respectively). Serum bilirubin increased from 0.56 \pm 0.17 to 1.43 \pm .52 mg/dl on the 10th day, and decreased thereafter (1.1 \pm 0.4 on the 20th and 29th days). All changes returned to basal values four weeks after fasting. There were no significant changes in serum levels of Ca, P, protein, albumin, and any of the measured hormones. Prolactin and TSH responses to TPH were also unaltered. He concluded that 1) intermittent abstinence from food and

drink for 17 hours a day for 29 days does not alter male reproductive hormones, hypothalamic-pituitary- thyroid axis or peripheral metabolism of thyroid hormones and 2) physicians caring for Muslims should be aware of changes of glucose and bilirubin during Ramadan.

Therefore it is concluded from the above two studies that Islamic fasting does not cause any adverse medical effect and on the contrary, may have some beneficial effect on weight and lipid metabolism.

Why Islamic Fasting Is Different Than Other Types Of Fasting (ref. 7)

The Islamic fast, is different from the so-called "Diet Plans" because it has beneficial features of both plans. Its unique medical benefits are due to the following factors:

1. As compared to other diet plans, fasting in Ramadan does not cause malnutrition or inadequate calorie intake since there is no restriction on the type or amount of food intake during Iftaar or Sahoar. This was confirmed by M.M. Ussaini (ref. 6) in 1974, when he conducted dietary analysis of Muslim students at the University of North Dakota, State University at Fargo during Ramadan. He concluded that calorie intake of Muslim students during fasting was at two-thirds of NCR-RDA.

2. Fasting in Ramadan is voluntarily undertaken. It is not a prescribed imposition from a physician. In the hypothalamus part of the brain there is a center called "lipostat" which controls the body mass. When severe and rapid weight loss is achieved by starvation diet, the center does not recognize this as normal and, therefore re-programs itself to cause weight gain rapidly once the person goes off the starvation diet. So the only effective way of losing weight is slow, self-controlled, and gradual weight loss which can be achieved by modifying our behavior and changing our attitude about eating especially by eliminating excess food. Ramadan is a month of self-regulation and self-training in terms of food intake thereby causing hopefully, a permanent change in lipostat reading.

3. In Islamic fasting, we are not subjected to a diet of selective food only (i.e. Protein only, fruits only etc.). An early breakfast, before dawn is taken and then at sunset fast is broken with something sweet i.e. dates, fruits, juices to offset any hypoglycemia followed by a regular dinner later on.

4. Additional prayers are prescribed after the dinner, which helps metabolize the food. Using a calorie counter, I counted the amount of calories burnt during extra prayer called Tarweeh. It amounted to 200 calories. Islamic prayer called Salat uses all the muscles and joints and can be considered a mild form of exercise in terms of calorie output.

5. Ramadan fasting is actually an exercise in self discipline. For those who are chain smokers, or who nibble food constantly, or drink coffee every hour, it is a good way to break the habit.

6. The psychological effect of Ramadan fasting are also well observed

by the description of people who fast. They describe a feeling of inner peace and tranquility. The prophet advised those fasting "If one slanders you or aggresses against you, tell him 'I am fasting'". Thus personal hostility during the month is minimal. Crime rate in Muslim countries fall during this month.

It is my experience that within the first few days of Ramadan, I begin to feel better even before losing a single pound. I work more and pray more; physical stamina and mental alertness improve. As I have my own lab in the office, I usually check my chemistry, that is, blood glucose, cholesterol, triglyceride before the commencement of Ramadan and at its end. I note marked improvement at the end. As I am not overweight, thank God, weight loss is minimal. The few pounds I lose, I regain soon after. Fasting in Ramadan will be a great blessing for the overweight whether with or without mild diabetes (Type II). It benefits those also who are given to smoking or nibbling. They can rid themselves of these addictions in this month.

Fasting for Medical Patients: Suggested Guidelines (ref. 10)

As mentioned earlier, the sick are exempt from fasting. But some, for whatever reasons, do decide to observe fasting. For physicians treating Muslim patients, the following guidelines are suggested.

a. **Diabetic Patients:** Diabetics who are controlled by diet alone can fast and hopefully, with weight reduction, their diabetes may even be cured or at least improved. Diabetics who are taking oral hypoglycemia agents like Orinase along with the diet should exercise extreme caution if they decide to fast. They should reduce their dose to one-third, and take the drug not in the morning, but with Iftaar in the evening. If they develop low blood sugar symptoms in the daytime, they should break the fast immediately. *Diabetics taking insulin should not fast.* If they do, at their own risk, they should do so under close supervision and make drastic changes in the insulin dose. For example, eliminate regular insulin altogether and take only NPH in divided doses after Iftaar or before Sahoor. Diabetics, if they fast, should still take a diabetic diet during Iftaar, Sahoor, and dinner. The sweet snacks common in Ramadan are not good for their disease. They should check their blood sugar before breakfast and after ending their fast.

b. **Hypertensive or Cardiac Patients:** Those who have mild to moderate high blood pressure along with being overweight should be encouraged to fast, since fasting may help to lower their blood pressure. They should see their physician to adjust medication. For example, the dose of water pill (diuretic) should be reduced to avoid dehydration, and long acting agents like Inderal LA or Tenormin can be given once a day before Sahoor. Those with severe hypertension or heart diseases should not fast at all.

c. **Migraine Headache:** Even in tension headache, dehydration or low blood sugar will aggravate the symptoms, but in migraine during fasting,

there is an increase in blood free fatty acids, which will directly affect the severity or precipitation of migraine through release of catecholamine. Patients with migraines are advised not to fast.

d. Pregnant Women (Normal Pregnancy): This is not an easy situation. Pregnancy is not a medical illness, therefore, the same exemption does not apply. There is no mention of such exemption in the Qur'an. However, the Prophet said that pregnant and nursing women do not have to fast. This is in line with God not wanting anyone, even a small fetus, to suffer. There is no way of knowing the damage to the unborn child until the delivery, and that might be too late. In my humble opinion, during the first and third trimester (three months) women should not fast. If however, Ramadan happens to come during the second trimester (4th-6th months) of pregnancy, a women may elect to fast provided that 1) her own health is good, and 2) it is done with the permission of her obstetrician and under close supervision. The possible damage to the fetus may not be from malnutrition provided the Iftaar and Sahoor are adequate, but from dehydration, from prolonged (10-14 hours) abstinence of water.

Therefore it is recommended that Muslim patients if they do fast, do so under medical supervision.

References

1. Bistrian, B.R., "Semi-starvation Diet, Recent Development", *Diabetic Care*, November 1978.
2. Blackburn, G.L., et al, "Metabolic Changes On PSMF Diet", *Diabetes*, June 1976.
3. Cott, A., "Fasting Is A Way Of Life", New York: Bantam Books, 1977.
4. Hirsch, Jules, "Hypothalamic Control Of Appetite", *Hospital Practices*, February 1984.
5. Khurane, R.C., "Modified Ketogenic Diet For Obesity", *Cancer Monthly Digest*, July 1973.
6. Hussaini, N.M., *Journal of Islamic Medical Association*, October 1982.
7. Athar, S., "Therapeutic Benefits Of Ramadan Fasting", *Islamic Horizon* May 1984.
8. Soliman, N., "Effects Of Fasting During Ramadan", *Journal of Islamic Medical Association*, November 1987.
9. F. Azizi et al, "Evaluation Of Certain Hormones And Blood Constituents During Islamic Fasting Month", *Journal of Islamic Medical Association*, Nov. 1987.
10. Athar, S., "Fasting For Medical Patients - Suggested Guidelines", *Islamic Horizon*, May 1985.

EFFECTS OF PROHIBITED FOODS, INTOXICANTS AND INGREDIENTS ON HUMAN HORMONES AND BEHAVIOR¹

Shahid Athar, M.D.

It is not required of a believer to always find a scientific justification for the divine prohibitions. However, if they look and find it, they must share the information— that will increase their faith. On the contrary, lack of confirmation should not cast doubts on the authenticity of Qur'an. We believe that all Qur'anic statements are true, and if science has not confirmed some of them yet, it will do so in the future, may be it needs to examine its data more deeply or repeat the experiment.

For the benefits of non-medical readers, before we discuss hormonal and behavioral effects of prohibited food, intoxicants and ingredients, we need to define some medical terms and inter-relationships that are involved in this discussion.

HORMONES:

These are the powerful secretions of Endocrine (internal) glands. They control the functions of all organs, and even individual cells. They are made from proteins and are peptides or sterols in nature. The endocrine glands are hypothalamus which secrete various releasing hormones for pituitary, and pituitary which secretes hormones for target endocrine glands. Both of them are located inside the brain. Target endocrine glands are thyroid, which are located in the neck and secrete thyroid hormones. Thyroid hormones control our metabolism, energy level, and temperature

¹ Presented on September 20, 1986 at the Fourth Annual Convention of the Islamic Food and Nutrition Council of America, held at the Muslim Community Center, Chicago.

tolerance. Behind them are para-thyroid gland which control our calcium metabolism. In the abdomen are adrenal glands above the kidneys which secrete cortisone, the life-saving essential hormone, and catecholamines and aldosterone which control our blood pressure and heart-rate. Steroids and catecholamines are derived from cholesterol. Also in the abdomen are pancreas which secrete insulin which lowers blood sugar, and glycogen which raises a low blood sugar. Lower down in the pelvis are gonads, ovaries in women, and testes in men, which secrete estrogen, progesterone and testosterone respectively. All these hormones have internal control and influence each other. They control our growth, muscle mass, bone development, temperature tolerance, blood pressure, energy, fertility, sex desire, thirst, and well being in general. (Diagram 1)

HOW DO HORMONES AFFECT BEHAVIOR:

The site of secretion of releasing hormone, and of neurotransmitter in the brain are the same in the hypothalamic area. Most of the psychotropic drugs act by either increasing or decreasing the neurotransmitter levels i.e. epinephrine, norepinephrine, serotonin, dopamine or endorphin level in the hypothalamic area. Similarly neurotransmitters influence hormone secretion.

Clinically we see various behavioral manifestation in endocrine disorders. Hypoglycemic patients (low blood sugar) suffer from depression and poor mental concentration and patients with low thyroid have impotency, depression, while with high thyroid have agitation, irritability, and lack of sleep. Patients with low cortisone (Addison Disease) have severe depression, while with high cortisone have hallucination and psychosis. Patients with high testosterone have been claimed to have criminal tendencies (i.e. rapists) while those with low testosterone have problems in behavior adjustment. Patients with calcium and sodium imbalance likewise have marked mental changes.

Physiologically boys and girls are different in behavior i.e. aggressive versus passive (playing with mechanical toys & guns versus dolls) due to difference in their sex hormone even in pre-pubertal age. This becomes more obvious after full sex differentiation takes place. In fact by changing the sex hormone level of a given sex one can change not only the sexual behavior but the aggressiveness of a particular sex. Homosexual males have been noted to have less male sex hormone, and on the other hand repeated sex offender males can be "cured" by castration or by injection of female hormone progesterone. In one experiment the female rats whose mothers were treated with testosterone while pregnant, showed male behavior pattern of threatening peer, rough play, and increased sexual activity as

compared to the control rat. This shows that the effect of testosterone not only affects the individual but the offspring as well. In humans, girls with congenital adrenal hyperplasia (excessive testosterone secretion), in post puberty age, show tomboy-attitude with preference for rough sports, preferring boys as playmates, and low interest in dolls and baby care! Sexual behavior is not only affected by testosterone, but also by pineal gland which is turned off and on by light and darkness.

Hormones, not directly, but indirectly control blood sugar, calcium, sodium balance, affect behavior in general anger, love, anxiety, panic attacks and agitation. The hyperactivity in children could be due to low blood sugar many food preservatives and coloring agent like nitrites, and Dye no. 5.

HORMONAL AND BEHAVIORAL EFFECT OF PORK MEAT AND FAT INGESTION:

Pork and pig fat is not only prohibited in the Qur'an, but also in the Bible because "Swine were designed to be scavengers, to eat up filth". In the Old Testament, Leviticus Chapter 7-8, it is mentioned about swine "Though he divides the hoof and be cloven-footed, yet he cheweth not the cud, he is unclean to you. Of their flesh shall you not eat". There is no mention in the Bible that Jesus ever ate pork in his life. It was Paul who declared all food and drink permissible saying "To the pure, everything is pure".

THE HABITS OF SWINE:

To get a first hand idea, I interviewed farmers of Fisher, Indiana, who breed swine. According to them "Swine is cheaper to breed, since it does not require pasture, it can live on manure and other such items including dead meat. In fact it can eat its own feces. Their sexual habits are also different than other animals like cow, sheep and goat. They have very little shame i.e. engage in sex acts anytime any place while others sometime wait for darkness. The female hog is very aggressive in sexual activity, when she is in "heat" she does not care about anything (i.e. food or privacy) until she has the sex. They i.e. swine, also lick the genitalia of their partners after sex like dogs, but unlike other mammals like cow, sheep or goat".

WHY IS PORK FAT DIFFERENT FROM OTHER ANIMAL FAT?:

Fats are lipids which are a source of energy. They can be of vegetable source or animal source. Triglycerides are neutral fats with 1 molecule of glycerol and 3 fatty acids. The fatty acids can be saturated or unsaturated.

The more unsaturated fats have high melting points. The iodine value of fat gives the degree of unsaturation. The iodine value of lard is 65, beef 45, and mutton 32. After ingestion, melsification of fat takes place in the stomach (acted on by gastric lipase). Pancreatic lipoprotein lipase hydrolysis of triglyceride into glycerol and fatty acid then takes place. The fatty acid is used by various tissue like muscles, heart, kidney and liver for energy source, while glycerol is stored in the adipose tissue. (Diagram 2) Herbivorous (plant eating) animal have unsaturated fatty acid on the position 2 of the triglyceride (TG) molecule, while the carnivorous (meat eating) animals have saturated fatty acid at position 2. Pancreatic lipase (PL) cannot hydrolyze TG molecule if saturated fatty acid are at position 2. Fat of dogs, rats, cats and pork have saturated fatty acid on position 2. *If a person eats the fat of herbivorous animal, the fat will be hydrolyzed, absorbed, and then resynthesized and stored as human fat, while that of carnivorous fat will not be hydrolyzed and therefore has to be deposited in humans as pork fat in the adipose tissue.*

WHAT HAS DEPOSITION OF PORK FAT TO DO WITH HORMONE AND BEHAVIOR IN HUMANS?:

Circulating hormones are in bound form and free form. The free form has to be attached to the receptor in fat tissue before becoming active. Obesity decreases the number of receptors therefore the hormones cannot utilize them. Therefore, if the hormone is insulin, it leads to diabetes (type 2), and if it is testosterone, it leads to subfertility and amenorrhea. The amount of fat also controls hormone release. Therefore we see menarche is delayed in athletic girls with less fat, and occurs early in sedentary overweight girls.

It can be postulated that in humans who have pork human fat deposit, there is derangement in the binding of hormones, therefore they have higher levels of circulating active hormones. It is possible that the sexual promiscuity and deviant sexual practices of pork eating society is due to what they eat! After all, it has been said by nutritionist "You are what you eat."

Since this is a paper on hormones and behavior, the effect of pork on cholesterol, sodium and the relationship to heart disease are not mentioned here.

EFFECTS OF DEAD MEAT AND BLOOD INGESTION:

Dead meat is the meat of animal which died before slaughtering and its blood was not drained out. Blood ingestion is not only the drinking of blood, prevalent in the Jahiliya days of Arabia or even now in Africa, but

also the blood which is retained inside the meat by improper killing of the animal. All hormones, and antibodies are retained in the blood, and all infective organisms, including viruses, flourish in the blood. Therefore ingestion of such will be dangerous. It may also induce animal instincts similar to those found in carnivorous animals like dogs, cats, and lions.

HORMONAL EFFECTS OF ALCOHOL:

Both in acute and chronic alcoholism, endocrine glands are affected. Hypoglycemia may result in acute alcoholism which may be severe and can lead to coma. This should be recognized and treated with IV dextrose since it may not respond to glycogen. Low magnesium with resultant low calcium is another effect of resulting in poor concentration, muscle twitching and even seizure. Increase in urine flow is due to suppression of antidiuretic hormone.

Chronic alcoholism leads to pancreatitis with failure of pancreatic endocrine system sometime (Diabetes) and exocrine gland (malnutrition). This leads to protein deficiency leading to reduced production of testosterone. This leads to impotency, gynecomastia in men and amenorrhea in women. Alcoholics can also have a pseudo (false) cushing syndrome. Alcohol liver disease causes increased clearance of testosterone with testicular atrophy leading to true hypogonadism. Sperm formation is also affected leading to infertility. Infant born to alcoholic mothers can also have undescended testes and labial hypoplasia. In addition, the cortisol levels are increased during withdrawal while LH and LH-RH levels are suppressed during chronic alcoholism.

BEHAVIORAL EFFECTS OF ALCOHOL:

Alcohol being a CNS depressant, depresses both facilitatory and inhibitory pathways. It is the suppression of the latter that discards the shame and removes control. Therefore, what an average person does not normally do i.e. use abusive language, undress in public, etc. he may perform under the influence of alcohol. There are more serious behavioral disorders described to include brain dysfunction in 50 - 70%; memory loss, depression both acute and chronic, high suicide rate, mood fluctuation, delirium tremulous (DTS) in withdrawal state, and blackout spells during acute drinking. One third of all auto accidents are due to alcoholism. Under the influence of alcohol, mental judgement and motor skill are affected. Sometime the level of consciousness is also affected. Alcohol has been also found to be at the root of family violence, sexual violence, rape, assault, and child abuse.

Alcohol is not an aphrodisiac as it is claimed. It not only depresses the

central nervous system effect on libido, but actually lowers the penile blood flow and tumescence (swelling) thereby decreasing performance.

EFFECTS OF NARCOTICS (COCAINE & MARIJUANA) ON HORMONE AND BEHAVIOR:

Both LSD and cocaine causes decrease in plasma testosterone and LH. The aphrodisiac effect is due to local anesthesia, causing prolonged erection and central stimulation causing general well being. Also by inhibiting inhibitions, they encourage engagement in unusual sex acts like sodomy or oral-genital sex.

Psychologically they cause mood elation and a false sense of euphoria followed by depression, anxiety and agitation. Panic attacks, suicidal tendencies, violent behavior are not uncommon. Chronic usage may lead to schizophrenia, paranoia, and a variety of psychiatric disorders, even infants born to cocaine mothers show signs of withdrawal.

EFFECTS OF INGREDIENTS ON HORMONE AND BEHAVIOR:

If prohibited ingredients i.e. pork, lard, alcohol, cocaine etc., are consumed, the effect will be as described earlier, though because of the small quantity it may be slow and cumulative.

More serious are items like sugar which causes reactive hypoglycemia, sodium which may lead to hypertension, nitrates and nitrites (used in meat preservation) linked to cancer, DES (Diethylstilbestrol, a female hormone given to cattle to increase fat and muscle content) linked to vaginal and cervical cancer in women, and artificial sweeteners like saccharine related to bladder cancer in rats, and aspartate related to brain damage.

CONCLUSION

More research is needed on all of the above areas especially those affecting the life style of Muslims to determine their affects more accurately. Though usage of prohibited items are not commonly found in Muslims, the dangers also may come to their health and spirits by the effects of non-prohibited items like western rock music, dress (i.e. tight jeans affecting testicular temperature) and sexual practices, and cigarette smoking.

SELECTED REFERENCES

1. Qur'an: 2:173, 5:4, 6:145, 16:115, 2:219, 4:43, 5:90, 5:91
2. Yusuf Al Qardawi: The Lawful and Prohibited in Islam 39-61
3. Ahmad H. Sakr: The Food Nutrition Manual.
4. Test Book of Endocrinology by William, R.H. 6th Ed. Chapter on Psychoendocrinology.
5. Endocrinology and Metabolism by Felig & Baxter.
6. Goodhart & Shils: Modern Nutrition In Health And Disease. 6th Ed.
7. Badri, M.B. "Islam and Alcoholism" ATP Publication Indianapolis, Indiana
8. Saud, M.A. "Sex Roles in Muslim Families of U.S.A." Published in Al-Ittihad.
9. Drucker, WM. "Endocrine Abnormalities Caused by Alcoholism" Medical Aspect of Human Sexuality - Vol. 16, No. 12, Dec. 1982.
10. Eckardt et al "Health Hazard Associated With Alcohol Consumption" JAMA 8.7.81
11. Washton and Stone "Human Cost of Cocaine Use" Medical Aspects of Human Sexuality - Vol. 18, No. 11 Nov. 1984.



THE ALCOHOL AND DRUG ABUSE : THE AMERICAN SCENE AND THE ISLAMIC PERSPECTIVE²

Shahid Athar, M.D.³

In Pakistan the first known case of heroine addiction was recorded in 1980. In 1981, there were only 25 cases recorded. By 1986 there were half a million cases. Now it is estimated that there are between 1-1.5 million cases in a population of 95 million. The rate of growth of narcotic addiction in Pakistan is higher than that of the USA. In addition to heroin addicts, there are about 1 million opium and hashish users, and 300,000 tranquilizer abusers. The actual number of alcoholics is difficult to determine, since they usually don't seek treatment. There are only 26 rehabilitation centers and 10,000 trained social workers.

By comparison, in the USA with a population of 220 million, there are 15 million alcoholics, 2 million heroin addicts, 5.5 million cocaine users, 6 million tranquilizer abusers and 18 million marijuana smokers. There are 700 treatment centers. (There are 10,000 cocaine kids (children born to cocaine mothers).)

The cost of drug treatment to the nation (USA) is \$117 billion per year. In 1986 Congress allotted only \$2.5 billion to control drug traffic, a \$110 billion industry. The value of cocaine seized at the borders in 1985 was \$70 million (5 million in 1981) and marijuana \$70 million (2 million in 1981). Next to Columbia, the USA is the second biggest *producer* of marijuana.

In addition to morbidity, the alcohol and drug scene is closely connected to the crime rate. In 1985 alone 800,000 arrests were made for drug violations (compared to 400,000 in 1973). Of the 523,000 inmates in U.S. prisons, one-third admitted drinking alcohol before committing the felony.

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³ Dr Shahid Athar is a member of Commission for a Drug Free Indiana set up by the state governor.

Of The 50,000 auto accident deaths annually, 23,000 are related to acute alcoholism, 5,000 being teenagers. In addition about 1,500,000 arrests made annually for traffic violation are related to alcoholism. In addition great man made disasters have taken place due to one man's alcohol indulgence: the Captain of the Exxon tanker in Alaska. No wonder, the ethics committee in US Congress was so careful in choosing the Defence-Secretary. One-third of all 75,000 AIDS cases occur in IV drug abusers or their partners. 54% of drug-related AIDS are in *heterosexual* men, 16% in women, 20% in homosexual men, 8% in partners of drug users and 3% in children born to mothers with drug abuse or mothers whose partners were drug abusers. The alcohol and drug abuse in children as young as 5 is increasing at an alarming rate.

In addition to alcohol, marijuana, heroin and cocaine, the other drugs abused are angel dust (PCP), speed, MDMA (ecstasy), china white, MPTP, tranquilizers and anabolic steroids. Let us discuss some of the medical aspects of these drugs in brief.

Marijuana:

It has 400 known chemicals, 61 of them affect the brain, the THC or delta 9 Tetrahedra Cannabinol is the most active ingredient. Marijuana impairs memory, concentration and reading capacity. Increases anxiety, apprehension and fear. It damages the heart and the lungs. It lowers testosterone (male hormone) and sperm count and affects the outcome of pregnancy. It is more carcinogenic than cigarettes.

Cocaine (Crack):

A potent brain stimulant, was initially thought to be harmless, thus added to the soft drink (coke) in the 1900s. When given intravenously, it produces intensely high and intensely low (depression), hallucination, convulsion, cardiac arrest and death.

Heroin:

(Opium) morphine derivative. Usually injected by needle, but can be snorted or smoked. It is highly addictive with intense withdrawal symptoms. Overdose results in death.

Amphetamines:

Are "pep pills" to fight fatigue and stay awake, suppress appetite, and stimulate heart and central nervous system. Dangerous in large doses, it can cause psychological addiction.

Barbiturates:

Are used to overcome an intense high and to produce sleep. It can be

fatal when used with alcohol.

LSD (Acid):

It is a powerful hallucinogen, can cause psychotic reaction and mental breakdown.

New Drugs:

MDMA (ecstasy) is LSD & Cocaine, causes disorientation initially but leads to permanent brain damage. China White is 1,000 times more potent than heroin. MPTP causes Parkinson's Disease (brain damage).

Alcohol:

Alcohol damages all organs of the body in due course. It damages the liver (cirrhosis), the heart (cardiomyopathy), sex hormones and the immune system, causes stomach bleeding (ulcer). Its effect on the brain can be acute (intoxication, delirium) or chronic (ataxia, memory loss, coordination). It is linked to breast cancer and fetal damage in women. It is responsible for violence, homicide, suicide and drunk-driving which takes most lives.

Profile Of An Alcoholic And Drug Abuser:

Instead of writing at length the problems of drugs and alcohol in the youth of America, which cost the nation billions of dollars, and cost mothers their sons and daughters (MADD), I think it will be better if I print an autobiography of one of my patients (19 year old, white female, upper class, name withheld). She writes:

"When I was in high school, my friends and I began to experiment with marijuana. After the excitement of smoking pot became "old hat", we began to try different drugs - such as hash and THC. Pretty soon cocaine and LSD were introduced to us and it was common place to go to any party "high" on one or more of these drugs. Several times, I had very frightening experiences. Specifically one night, after taking LSD, I went home (to my parents' home) before my "high" was over. Usually, I stayed overnight with a friend, who "tripped" with me. On this night, my boyfriend and I broke up right after I took the LSD, so I went home alone. My parents were asleep in the next room and I felt that I had to be very quiet, so as not to wake them. I was afraid to make any noise, plus I was upset over the breakup of my relationship with my boyfriend. When the LSD took effect, I was very frightened. The walls looked as though they were melting; I heard strange noises; I hallucinated even after closing my eyes. The sights were very unpleasant and (produced) frightening images. But I couldn't do anything but lie in bed, waiting for the drug to wear off. I didn't think I could tell my parents,

since I knew I had taken an illegal and dangerous drug - I was awake nearly all night, scared to death with no one to talk to. For days after this incident, I was nervous and jumpy and depressed. The incident was a major shock to my system and one that I would never want to repeat.

I stopped taking "drugs" immediately after my senior year in high school (I had only discovered drugs at the beginning of that school year). But, I guess the stage was set for my future reactions. Drugs did not help - they were just fun at first - but then once the "high" was gone, there was a real "let down" feeling that followed. So we'd either do more drugs or drink a few beers to make that feeling go away. Even now, whenever I get down or "stressed out" - the first thing I do is have a few drinks. The day after is always unpleasant if I have had too many drinks - so the opportunity for a vicious cycle is there. I honestly believe that the "harmless" experiments with marijuana, several years ago, may have been the start of this tendency to turn to alcohol today. *The bottom line is, I'd be a hundred times better off today - happier and wealthier if drugs had never entered my life years ago*.

The Islamic Perspective:

Shari'ah or Islamic Law seeks to protect faith (belief in one God), life (abortion, suicide, homicide), property (ownership) and the mind (intoxicants). Normally in the brain there is an inhibitory control which tells us not to engage in shameful or wrongful acts. Any suppressant drug including alcohol will suppress this nerve pathways and remove the restraint. Ability to make a judgement, to protect the body or honor, a quality for humans is lost under the influence of drugs.

There are two main features of Islamic prohibitions.

a) Islam stops the wrong at the inception and not at the end. There is nothing like a safe drinking age, or safe drugs to get high on. Most of the teenage alcoholics don't buy the alcohol from the store but get it at home. Islamic law makes no distinction between children and parents. Total prohibition (or total abstinence), is required of all unlike the prevalent practice in western society. This duality of standards (or double standard of judgement) has crippled the western societies in their ability to deal with the problems of drugs and alcohol.

b) Islam blocks all the avenues to wrong. Therefore not only illicit sex is prohibited, but the casual free mixing of sexes, obscenity and pronography is prohibited, and in the same context, not only is drinking wine prohibited, but making it, serving it, selling it, keeping it, or even growing grapes for the sole purpose of selling it to a winery for making wine is prohibited by the Prophet (pbuh). Some 1400 years ago, Allah (SWT), our Creator and Sustainer, who cares for us, sent down following revelation in the following order, mentioned in Qur'an.

"They ask you concerning wine and gambling Say: "In them there is a great sin, and some profit, for men, but sin is greater than the profit" (Qur'an 2:219).

"O you who believe! Approach not prayers, with a mind befogged, until you can understand all that you say" (Qur'an 4:43).

"O you who believe! Intoxicants and gambling, (dedication of) stones, and (divination by) arrows, are an abomination of Satan's handiwork: Avoid such (abomination) that you may prosper" (Qur'an 5:93).

"Satan's plan is to sow enmity and hatred among you with intoxicants and gambling, and to hinder you from the remembrance of Allah and from prayer. Will you not then give up" (Qur'an 5:93).

The above verses were received over a period time. The Muslim society was gradually prepared psychologically for the final prohibition, so that when the last verse was received, they accepted it without any reluctance. When the prohibition was announced it had an electric effect. Anyone who happened to be drinking, threw away the glass and the cups raised to the lips were dashed to the ground. The streets of Madinah that day flowed with wine!

The Prophet Mohammed (pbuh) on Wine and Other Intoxicants

1. "Every intoxicant is khamr, and every khamr is haram (unlawful)" (Reported by Muslim).
2. "Of that which intoxicates if taken in large amounts, a small amount is (also) haram" (Ahmad, Abu-Dawaud and Al-Timidhi).
3. "Khamr (intoxicants) is the mother of all evils" (Reported in Bukhari).

The solutions:

There are no easy solutions. In fact it is a multifaceted problem and each aspect should be addressed individually, and seriously, both by the government and by the public. While the total ban on production, import and export is the ideal solution to create a drug free society, by experience (i.e. in the USA with total ban on alcohol in the 1920s), it is difficult to achieve unless strict laws are made and enforced on drug producers, traffickers and offenders, without making distinction between the helpless victim and a powerful drug lord. Our current system punishes the former and spares the latter. Islam offers such tough laws to safeguard peace, morality and health of individuals and society. While we are trying to do these, we in the meantime should pay more attention to the needs of the victim by

educating the masses, social workers, law enforcement agencies and the physicians, while at the same time developing treatment and rehab centers to cope with ever increasing human sufferings, and to help some young men, women, sons, daughters, husbands and fathers from being lost forever. All these require motivation and commitment from all of us. It is beyond the dignity of a human being to become dependent on alcohol and drugs and be unable to look after himself, his family and serve his Creator in the best possible manner.

SEX EDUCATION FOR MUSLIM YOUTH AND THEIR PARENTS¹

ABSTRACT

Sex Education of children and youth is a sensitive but important aspect of their learning. At present Muslim children are getting secular sex education at schools and getting the wrong messages from the media. In this article the pro and the con of American sex education and Islamic concept of sexuality and marriage are discussed. Finally a curriculum is proposed for Islamic sex education to be given at home or Sunday Islamic schools.

Key Words: Sex Education, Teenage Pregnancy, Sex in Islam and Marriage.

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"Say: Are they equal those who know, and those who do not know?" (Qur'an 39:9)

"Blessed are the women of the Ansar (citizens of Medina). Shyness did not stand in their way for seeking knowledge about their religion", (saying of Prophet Muhammad - reported in Bukhari and Muslim).

Introduction: Although Qur'an has given so much emphasis on acquiring knowledge, and in the days of the Prophet Muhammad (pbuh), Muslim men and women were never too shy to ask him questions including those related to private affairs such as sexual life. However, for Muslim parents of today sex is a dirty word. They feel uncomfortable discussing sex education with their children, but do not mind the same taught at their school by secular or non-Muslim teachers (of even opposite sex), by their peers of either sex, and by the media and television (an average child is exposed to 9000 sexual scenes per year). These parents should know that sex is not always a dirty word. It is an important aspect of our life. Allah who cares for all the aspects of our life, and not just the way of worshipping Him, discusses in the Qur'an, reproduction, creation, family life, menstruation and even ejaculation. And Prophet Muhammad (pbuh) who was sent to us as an example, discussed with his companions many aspects of their sexual life including sexual positions. The main reason Muslim parents do not or cannot discuss sex education with their children is because of the way they have been brought up, because they are ignorant and maybe because they are not comfortable with their own sexuality or its expression. They leave Islamic education to the Sunday school, and sex education to the American schools and the media.

What Is Sex Education And Who Should Teach It?

Is sex education about knowing the anatomy and physiology of human body, or about the act of sex, or about reproduction and family life, or about prevention of sexually transmitted diseases and unwanted pregnancy? Is teaching sex education equal to giving permission to engage in sex? One sex educator at my son's school told the parents "I am not planning to tell your children whether or not they should engage in sex, or how to do it but, in case they decide to do it, they should know how to prevent STD (VD & AIDS) and pregnancy". At present the sex education is incomplete as it does not cover the morality associated with sex, sexual dysfunctions and deviations and the institution of marriage.

One of the basic questions is, do children need sex education? Do you teach a baby duck how to swim or just put it in water and let it swim. Afterall, for thousands of years, men and women have had sex without any

formal education. In many traditional civilizations, sex education starts after the marriage and passes through a stage of trial and error. Some couples learn it faster than others, and do it better than others, due to the difference in sexual perception and expression of one's partner. In my opinion having a dozen children is not necessarily proof of love. An appropriate and healthy sex education is crucial to the fulfillment of a happy marriage.

With regard to the question of who should teach sex education, I believe everyone has to play his or her role. The parents as a whole have to assume a more responsible role, especially the father. He has a duty to answer his son's questions and the mother her daughter's. We can hardly influence the sex education at school or by the media which I call "VD - AIDS And Teenage Pregnancy Education", but we can supplement that with some ethical and moral dimension and add family love and responsibility. Apart from these players, some role can be played by Sunday school teachers, the family physician, the pediatrician and the clergy. Within a family the older sister has a duty towards the younger one and the elder brother to the younger one.

Sex Education In American Schools

In every American school, public or private, sex education is being given from grade 2 to 12. The projected 1990 cost to the nation will be \$2 billion per year (Ref. 2). Teachers are told to give the technical aspects of sex education without telling the students about moral values or how to make the right decisions. After describing the male and female anatomy, and reproduction, the main emphasis is on the prevention of venereal diseases and teenage pregnancy. With the rise of AIDS, the focus is on "Safe Sex" which means having condoms available each time you decide to have sex with someone you don't know. With the help of our tax dollars, about 76 schools in the country have started dispensing free condoms and contraceptives to those who go to school health clinics. Very soon I project there will be contraceptive vending machines in School hallways, and "children" could get a condom each time they have a need to engage in sex. The role of parents is minimized and sometimes ridiculed by American sex educators. In one of the sex education movie I was made to watch as a parent at my son's School "Am I Normal?", a young boy asks a question about sex to his father, who (is shown as a bum and a slob) shuns him and diverts the topic. Finally the boy learns it from a stranger and then is shown going into a movie theater with his girlfriend.

The secular sex education devoid of morality promoted by educators like Dr. Sol Gordon (Ref. 3) is in many ways unacceptable to our value system. The examples of Dr. Gordon's beliefs are

- a. Nudity in homes (in shower or bedroom) is good and a healthy way to introduce sexuality to smaller (under 5) children, giving them opportunity to ask questions. In the same book he also states that 75% of all child molestation and incest (500,000 per year) occur with a close relative (parent, step-parent or another family member).
- b. A child playing with the genitals of another child is a "naïve exploration", is permissible and should not be scolded or punishment. He is also aware that boys as young as 12 have raped girls as young as 8. We don't know when this "naïve exploration" becomes a sex act.
- c. "Children caught reading 'dirty' magazines should not be made to feel guilty, but parents should use it as a chance to get some useful points across to him or to her about sexual attitudes, values and sex exploitation". Like charity, pornography should start at home!!
- d. "If your daughter or son is already sexually active, instead of telling them to stop it, the parents' moral duty is to protect their health and career by providing them information and means for contraception and avoiding VD"—maybe its true for rebellious teens and their submissive parents.

Educators like Dr. Gordon do not believe that giving sexual information means giving the ok for sex. I just wonder why some folks after being told the shape, color, smell and taste of a new fruit, and pleasures derived from eating it, would not like to try it? These educators say that even if your child does not ask any questions about sex, parents should initiate the discussion using i.e. a neighbors pregnancy, a pet's behavior, advertisement, popular music or a TV show. I wonder why these educators are obsessed with loading children with sexual information whether they want it or not.

The More They Know It - The More They Do It

The sex education in American schools has not helped decrease in the teenager the incidence of VD or teenage pregnancy (Ref 4-9). This is because it has not changed their sex habits. According to Marion Wright Elderman, President of Children's Defense Fund, in a recent report, out of every 20 teens, 10 are sexually active but only 4 use conception, 2 get pregnant and one gives birth. In 1982, a John Hopkins study found one in out of every 5 - 15 year olds, and one out of every 3 - 16 year olds are sexually active. The incidence increased to 43% in 17 year olds. The Louis Harris poll in 1986 found that 57% of the nation's 17 year olds, 46% of 16 year olds, 29% 15 year olds were sexually active. Now it is estimated that about 80% of girls entering college had sexual intercourse at least once. Going to church does not help either.. 1438 teenagers, mostly white, attending con-

servative evangelical church were sent questions about their sex life. 26% of 16 year olds, 35% of 17 year olds, and 43% of 18 year olds said they had sexual intercourse at least once. 33% that responded also said sex outside of marriage was morally acceptable.

Hazards Of Early Sex

The health hazards of early sex includes sexual trauma, increase in incidence of cervical cancer, sexually transmitted disease and teenage pregnancy. We will take up each individually.

A variety of injuries are possible and do happen when sex organs are not ready for sex in terms of full maturation. Some of these injuries have a long lasting effect. The reader who is interested in learning the details of sexual trauma is advised to reference article #10. Cervical cancer has been thought to be related to sex at an early age and with multiple partners. Dr. Nelson and his associates in their article on epidemiology of cervical cancer (CA - A Cancer Journal for Clinicians Nov/Dec 1984 issue -Page 312), call it a sexually transmitted disease.

Teenage Pregnancy

About one million or more teenage girls become pregnant every year, at a rate of 3000 per day, 80% of them are unmarried. Out of this 1 million, about 500,000 decide to keep their baby, and 450,000 are aborted (or ? murdered). 100,000 decide to deliver and give up the baby for adoption. In 1950 the incidence of birth for unmarried teenagers was only 13.9%, but in 1985 it increased to 59%. It is a myth that teenage pregnancy is a problem of the black and poor. On the contrary, 2/3 of the teens getting pregnant now are white, suburban and above the poverty income level. The pregnancy rate (without marriage) in 54,000 enlisted Navy women is 40% as opposed to 17% in the general population. What is the life of those who have teenage pregnancy? Only 50% complete high school, more than 508 of them are on welfare. They themselves become child abusers, and the children when grown up, have 82% chance of becoming a teenage pregnancy statistic. 8.6 billion dollars are spent every year for the financial and health care support of teenage mothers.

The sexual revolution of the 60's has affected another dimension of health care. In 1985 alone, 10 million cases of chlamydia, 2 million gonorrhea, 1 million venereal warts, 0.5 million genital herpes and 90,000 syphilis were diagnosed. The plague of AIDS is adding a new twist to our fears. 200,000 cases have been diagnosed in the USA alone, out of where 508 have already died. The disease is growing at a rate of one every 14 minutes, and so far there is no good treatment. Father Bruce Ritter in New

York, who operates shelters for runaway children, says the biggest threat to the nations 1 million runaway is the threat of AIDS.

Why Do Children Get Involved In Sex?

There are many reasons (Ref. 11), the most common being peer pressure. Their common response is "everybody is doing it". One of the reasons they indulge in sex at an early age is because they desire to show sexual competence to adults and a way to get ahead. Another common reason is their lack of self esteem which they want to improve by becoming a father or a mother. Sometimes it is due to a lack of other alternatives to divert their sexual energies. It could also be due to a lack of love and appreciation at home. Detachment from home can lead to attachment elsewhere. The sexual pressure on them is everywhere, at school from their peers, from the TV where about 20,000 sexual scenes are broadcasted in advertisement, soap-operas, prime time shows and MTV. The hard core rock music nowadays fan the flames of sexual desires. Most of the parents do not know what kind of music their children are listening to. If they care, and listen to rock songs like "Eat Me Alive (Judas Priest), Purple Rain (Prince), Losing It (Madonna), The Last American Virgin, Papa Don't Preach, Private Dancer (Tina Turner), Material Girl (Madonna) and Cyndi Lauper's songs, they will know what the songs are saying. The songs have sensuous and graphic words and sentences which made Kandy Stroud, a former rock fan, write an in Newsweek (May 6, 1985) and beg parents to stop their children from listening to what she calls "Pornographic Rock". How does music affect our sexual mood? It does so by activating melatonin, the hormone from the pineal gland in the brain which is turned on by darkness, turned off by flashing light. It is the same gland which has been thought to trigger puberty, and affect reproductive cycle, and sex mood.

What Is The True Role Of Parents?

For their failures (i.e. teenage pregnancy), the American educators are putting the blame as usual on the parents. In fact in Wisconsin and many other states, the parents of a baby born to a teenager are responsible for the financial support of the child. However, parents are not needed if their teenage daughter needs contraceptives or abortion. Faced with such hypocrisy, the parents job is to instill in, their teenagers' mind what is not taught in sex education classes i.e. reason not to engage in sex, reason not to get pregnant, etc. At the same time, they should divert their energies to some productive activities like community work, sports, character growth, or Sunday schools. Another role of parents is to help their children make the right decisions. In Islam anything which leads to wrong is also consid-

ered wrong. Therefore parents should control the music children are listening to, the TV program they are watching, the magazines they are reading, and the dress (which may provoke the desire in the opposite sex) they are wearing. While group social activity should be permitted with supervision, dating should not be allowed. When American teenagers start dating sex is foremost on their mind.

In fact, 25% of college freshman boys during a survey responded by saying that if they have paid for the food, and the girl does not go all the way, they have a right to force her to sex. Many of the rapes occur at the end of the date and are not reported.

Anything which breakdown sexual inhibition and loss of self control i.e. alcohol, drug, parking, petting or just being together for two members of the opposite sex in a secluded place should not be allowed for Muslim teenagers. Kissing and petting is preparing the body for sex. The body can be brought to a point of no return.

In summary the Muslim parents should teach their children that they are different from non-Muslims in their value system and way of life. Having a feeling of love in your heart for someone else of the opposite sex is different and beyond control, while expression of the same through sex is entirely different and should be placed under control. Muslim children should be told that they cannot drink alcohol, eat pork, take drugs, and engage in premarital sex either.

Islamic Concept Of Sexuality (Ref. 12-16)

Islam recognizes the power of sexual need, but the subject is discussed in the Qur'an and the sayings of the Prophet Muhammad (pbuh) in a serious manner, in connection with marital and family life. Islam does not consider women (or men) an object of sexual pleasure, but Islam provides a legal framework for a relationship which fulfills the will of God. While the sex outside marriage is a punishable sin, sex with one's spouse is an act of worship. Islamic laws regarding sex are fixed and do not change with peer pressure or changing values of a society. Virginity at the time of marriage is considered a virtue in Islamic morality, but a disadvantage in the West. No wonder less than 10% of American brides are virgin.

Mention Of Creation, Reproduction And Sex In Qur'an.

1. "Did we not create you from a sticky fluid?, Which we laid up in a safe abode, for a known term. Thus We arranged, how excellent is our arrangement." (77:20-24)
2. "So let man consider from what he is created. From a gushing fluid, that issues between the loin and ribs." (86:5-7)

3. "Verily we created man from a product of wet earth, then plated him as a drop in a safe lodging, then we fashioned the drop into a clot, then we fashioned the clot into a little lump, then we fashioned the lump into bones, then we clothed the bones with flesh, and then produced it as another creation so blessed be Allah, the best of creators" (23:12-14).

Commentary: The seminal fluid has all the ingredients (protein, carbohydrate, minerals) as the earth has. The order described in the Qur'an of growth given 1400 years ago when no microscope, x-ray or ultrasound were available is exceptionally accurate. Western scientists recognized sperm in the 17th century and thought it to be a miniature pre-formed man.

4. "Your women are a tilth for you, so enjoy your tilth the way you wish, and make an introduction to yourself." (2:223)

Sayings Of Prophet Muhammad (PBUH)

1. "When one of you have sex with your wife it is a rewardable act of charity". The companions were surprised and asked, "but we do it purely out of our desire, how can it be counted as a charity?". The Prophet replied "if you had done with a forbidden women, it would have been counted as a sin, but if you do it legitimately it is counted as a charity".
2. "Let not the one of you fall upon his wife like a beast falls. It is more appropriate to send a message before the act".
3. "Do not divulge secrets of your sex with your wife to another person, nor describe her physical feature to anyone".

Concept Of Adultery (Fornication or Zina) In Islam.

God says in the Qur'an

1. "Do not come near to adultery. Surely it is a shameful deed and Evil, opening roads (to other evils) (Qur'an 17:32).
2. "Say: Verily, my Lord has prohibited the shameful deeds, be it open or secret sins and trespasses against the truth and reason. (Qur'an, 7:33)
3. "Women impure are for men impure, and men impure are for women impure and women of purity are for men of purity, and men of purity are for women of purity". (Qur'an 24:26)

Prophet Muhammad (pbuh) has spoken in many place against adultery as one of the three major sins. However the most interesting story is that of a younger man, who came to him and asked his permission for fornication, since he could not control himself. The prophet reasoned with him and

asked him if he would approve of someone else performing illegal sex with his mother, sister, daughter or wife. Each time the man said "no", the prophet replied that the woman with whom you plan to have sex could also be somebody's mother, sister, daughter or wife. The man understood and repented. The Prophet prayed for his forgiveness.

Adultery is a crime not against one person but against the whole society. It is a violation of a marital contract. 50% of all first time marriage in this country result in divorce in 2 years, and the main reason for divorce is extra marital affairs of either the husband or wife. Adultery, which includes both premarital and extra marital sex, is an epidemic in this society. Nobody seems to listen to the Bible which says frequently "Thou shall not commit adultery". The Qur'anic injunction "Do not approach adultery" is more sensible. What it means is that not only is illegal sex prohibited, but anything which leads to illegal. These things include dating, free mixing of the sexes, provocative dressing, nudity, obscenity and pornography. The dress code both for men and women is to protect them from temptation and desires by on lookers who may lose self control and fall into sin.

"Say to the believing men, that they should lower their gaze and guard their modesty: that will make for greater purity, and God is well acquainted with all they do".

"And say to the believing woman that they should lower their gaze, and guard their modesty—". (Qur'an 24:30-31)

Concept Of Marriage In Islam

Islam recognizes the strong sexual urge and desire for reproduction. Thus Islam encourages marriage as a legal sexual avenue and as a shield form immorality (sex without commitment). In Islam the marriage of a man and woman is not just a financial and legal living arrangement, or a means for reproduction, but an agreement which provides a total commitment, a contract witnessed by Allah. Love and joy of companionship is a part of the commitment. A married couple assumes a new social status and responsibility for himself, his wife and his children and for the community.

Qur'an

"Among His signs is that He created consorts for you from among yourself, so that you may find tranquility with them, and (He) set love and compassion between you. Verily in this are signs for people who reflect". (30:21)

Saying of Prophet Muhammad (PBUH)

1. Marriage is my tradition. He who rejects my tradition is not of me. (Bukhari, Muslim)
2. Marriage is half of the religion, the other half is being God-fearing. (Tabarani, Hakim)

In Islam there is no fixed rule as to the age of marriage. It is becoming fashionable for Muslim young men not to marry until they have completed their education, have a job, or reached the age of 26-30 or more. Similarly Muslim young girls say they want to marry after the age of 24 - Why? When asked, they would say "I am not ready for it" - not ready for what? Don't they have normal sexual desire? If the answer is "yes" then they have only one of two choices a) marry or b) postpone sex (abstinence till they marry).

Qur'an

"Let those who find not the wherewithal for marriage, keep themselves chaste till God find them the means from His Grace". (24:33)

Saying Of the Prophet Muhammad (pbuh)

"Those of you who own the means, should marry, otherwise should keep fasting for it curbs desires (Ibn Massoud).

The western concept for delaying marriage is different from ours. When I suggested to one of my sexually active young female patient to get married, she bluntly said "I don't want to sleep with the same guy every night".

Role Of Muslim Parents And Muslim Organizations.

I am not proposing that all Muslim youth be married at age 16. But I must say that youngsters should accept their biological instinct and make decisions which will produce a more satisfied life for them devoted to the career rather than spending time in chasing for dreaming about) the opposite sex. Parents should help their sons and daughters in selection of their mate using Islamic practice as a criteria and not race, color or wealth. They should encourage them to know each other in a supervised setting. The community organization has several roles to play.

- a). To provide a platform for boys and girls to see and know each other without any intimacy.
- b). Offer premarital educational courses to boys and girls over 18, separately to prepare them for the role of father and husband and of mother and wife.

The father has a special role, mentioned by Prophet Muhammad "one who is given by God, a child, he should give it a beautiful name, should give him or her education, and training and when he or she attains puberty, he should see to it that he or she is married. If the father does not arrange their marriage after puberty, and the boy or girl is involved in sin, the responsibility of that sin will lie with the father". (Reported in Mishkat, page 271).

The Curriculum For Islamic Sex Education.

Islamic sex education should be taught at home, starting at an early age. Before giving education about the anatomy and physiology, belief in the Creator should be well established. As Doestoevsky put it "without God everything is possible" meaning that the lack of belief or awareness of God gives an ok for wrong doing.

A Father should teach sons and a mother should teach daughters. In the absence of a willing parent, the next best choice should be a Muslim male teacher (preferably a physician) for boys and a Muslim female teacher (a nurse or physician) for a girl.

The curriculum should be tailored according to the age of the child and classes be held separately. Only pertinent answers to questions should be given. By this I mean that if a 5 year old asks how did I get into Mommie's stomach, there is no need to describe the whole act of intercourse. Similarly it is not necessary to tell a 14 year old how to put on condoms. This might be taught in premarital class just before his or her marriage.

The Curriculum For Sex Education Should Include

- a. Sexual growth and development
 - Time-table for puberty
 - Physical changes during puberty
 - Need for family life
- b. Physiology of the reproductive system
 - For girls - organ, menstruation, premenstrual syndrome
 - For boys - the organ, the sex drive
- c. Conception, development of fetus & birth
- d. Sexually transmitted disease (VD/AIDS) (emphasize the Islamic aspect).
- e. • Mental, emotional & social aspect of puberty
 - Social, moral and religious ethics
 - How to avoid peer pressure

Sex Education After Marriage

This article is not intended to be a sex manual for married couples, though I may write one someday. I just wanted to remind the reader a short verse in the Qur'an and then elaborate on it.

"They are your garments, and you are their garments". (Qur'an 2:187)

Thus husbands and wives are described as garments to each other. A garment is very close to our body, so they should be close to each other, a garment protects and shields our modesty, so they should do the same to each other, garments are put on anytime we like, so should they be available to each other anytime, and a garment adds to our beauty, so they should praise and beautify each other.

For husbands I should say this. Sex is an expression of love and one without the other is incomplete. One of your job is to educate her in matters of sex especially in your likes and dislikes and do not compare her to another woman.

For wives I want to say this. Man's sexual needs are different from women's. Instead of being a passive recipient of sex, try to be an active partner. He is exposed to many temptations outside the home. Be available to please him, and do not give him an excuse to make a choice between you and the Hellfire.

References

1. The Glorious Qur'an, Chapter 39, Verse 9.
2. Sahih Al-Bukhari - Collection of Ahadith Book of Knowledge, Vol. I, Hadith #131, Page 97 Translated by M.M. Man, Published by Darul Arabia Beirut, Lebanon.
3. Report On Sex Education, Time Magazine, Nov. 24, 1986.
4. Gordon S. Dickman IR. "Sex Education - The Parent's Role" Public Affairs Pamphlet No. 549 - Published by Public Affairs Committee 381 Park Ave. South, New York, NY 10016.
5. Mast CK: Sex Respect: The Option Of True Sexual Freedom, Bradley Illinois, Published by Respect Inc., Page 41 1986.
6. Richard D., "Teenage Pregnancy And Sex Education In The Schools" "What Works And What Does Not Work" - San Antonio Pregnancy Center, Page 6, 1986.
7. Zamichow N. Teenage Sex. Ladies Home Journal; October 1986, Page 138-205.
8. Children Having Children. Time Magazine; December 9, 1985.
9. Hatcher Adams J. Solving The Teenage Pregnancy. Medical Aspects of Human Sexuality; March 1980. Page 10-23.
10. What's Gone Wrong With Teen Sex. People Magazine; April 13, 1987.

11. Annual Report Of Children's Defense Fund. Published in Northside Topics: January 1988.
12. Report On The Teens Sex Attitude Survey By Eight National Evangelical Churches. Indianapolis Star, February 2, 1988.
13. Elam A, Ray VG. Sexually Related Trauma - A Review. *Annals Of Emergency Med.*, Vol. 15:5, May 1986, P. 576-584.
14. Nelson CA. A Cancer Journal For Clinicians; Nov/Dec 1984. American Cancer Society.
15. Marvin S. How Adults Could Have Helped Me. *Parade Magazine*, (Supplement to Indianapolis Star) August 21, 1988; Page 4-7.
16. Time Magazine, February 4, 1985; Page 85.
17. Athar, S. The Twentieth Century Plague. *Crescent International*, Canada; Nov. 1987.
18. Curran J. Report Of Center For Disease Control. Indianapolis Star; June 14, 1988.
19. Mast CK. How To Say No To Sex. *Medical Aspects of Human Sexuality*; Sept. 1988; 26-32.
20. Stroud. Stop Pornographic Rock. *Newsweek Magazine*; May 6, 1985.
21. Williams RH. Effects of Melatonins In Humans. In: *Textbook of Endocrinology*, 6th Ed., Page 628.
22. Dracula of Hormones. *Newsweek Magazine*; Nov. 25, 1985; 94-95.
23. Bucaille M. The Bible, The Qur'an and Science. The Holy Scriptures Examined In Light of Modern Knowledge. 4th Edition. Publishers Seghers, Paris, France, 1986. pp 207-210.
24. Naqvi MZ. The Modesty and Chastity In Islam. Kuwait: Islamic Book Publisher; 28-31.
25. Al-Qardawi Y. The Lawful and Prohibited in Islam, Indianapolis: American Trust Publications, 195-197.
26. Hathout H. Islamic Perspective In Obstetrics and Gynecology. The Islamic Organization For Medical Sciences; 92-122.
27. Abu Saud M: "Sex Roles In Muslim Families of USA" American Trust Publications, Indianapolis, 1979.
28. The Glorious Qur'an, Chapter 77, Verse 20-24.
29. The Glorious Qur'an, Chapter 86, Verse 5-7.
30. The Glorious Qur'an, Chapter 23, Verse 12-14.
31. Lyons AS, Petrucelli RJ *Medicine - An Illustrated History*, Published by Abrams 1978, Page 432.
32. The Glorious Qur'an, Chapter 2, Verse 223.
33. Collection of Ahadith by Imam Muslim quoted in reference 26 page 96.
34. Ibid Page 98.
35. Ibid Page 96.
36. The Glorious Qur'an, Chapter 17, Verse 32.

37. The Glorious Qur'an, Chapter 7, Verse 33.
38. The Glorious Qur'an, Chapter 24, Verse 26.
39. Iman Ahmad quoting Abu Omama, Modesty and Chastity In Islam. MZ Nadvi, Page 30-31. Islamic Book Publisher, Kuwait.
40. The Glorious Qur'an, Chapter 24, Verse 30-31.
41. The Glorious Qur'an, Chapter 30, Verse 21.
42. Sahih Al-Bukhari Vol. 7 (Book of Marriage) Page 2.
43. Collection of Ahadith by Al-Tabarani and Hakim quoted in ref. 26, Page 141.
44. The Glorious Qur'an, Chapter 24, Verse 33.
45. Collection of Ahadith by Bukhari Vol. 7 (Book of Marriage) Page 3, Hadith #3.
46. Mishkat Al-Masabih, Collection of Ahadith, Page 271. Published by Sheikh Muhammad Ashraf, Lahore, Pakistan.
47. The Glorious Qur'an, Chapter 2, Verse 187.

APPLICATION OF THE PROPHET'S MEDICINE (*TIBB-AL-NABI*) TO MODERN MEDICAL PRACTICE¹

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Medical practice in the United States is facing its most serious challenge in the past 100 years. While no medical system can be expected to have a monopoly on cures, today allopathic medicine is facing an ever-growing number of unorthodox assaults, on top of the malpractice increase. And, these charges are being lodged despite the outstanding advances and cures which can be attributed to scientific medicine.

The chief complaints against the orthodox system are that it is often harmful, often ineffective, and often too expensive. Modern hospital medicine is vulnerable on all three counts. It uses techniques and drugs that produce many adverse reactions, cost too much and frequently do not cure. Indeed, Dr. Lewis Thomas, President of the Sloan-Kettering Memorial Cancer Center in New York, confessed in a recent interview, that all internists know that ninety percent of all illnesses get better by themselves.

In the late 1977's in modern and scientific America (and much of the rest of the developed world), there need be no concern for the plagues and diseases which destroyed civilizations in the past: smallpox, poliomyelitis, cholera, measles, and especially systemic bacterial infection are no longer a threat to life. In one sense we are much healthier than we ever were in history, yet, we are much more apprehensive and fearful than ever before. The reports of unnecessary surgeries, suicides, drug abuse, sexual perversion, alcoholism and a wide array of "nervous" disorders, affect the entire population. What is more the causes of death for most people cancer, heart disease-contain a clue as to the true source and cause of the problem, the

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gradual withering away and withdrawal of the life force itself. Still, women abort their children, everyone seems quite willing to ingest substances known to shorten their life span, and engage in life habits and patterns which demonstrably build disease.

Coinciding with this growing lack of true health is an assault upon the very integrity of the physician, and the substantial proportion of malpractice suits are rooted in the common misunderstandings about medicine and responsibility for health. Patients feel that the doctor has all the answers and the patient is but a passive participant in the relationship. Such an expectation is beyond the ability of medical science to satisfy. Physicians themselves have difficulty overcoming the psychological and financial temptations involved in assuming such a role. Thus, they too fall into the traps inherent in relationships based upon unjustified dependency.

It is at this critical juncture-when Man seems to be losing the physical and psychological underpinnings necessary for rational life-that we must turn to our Gracious and Merciful Creator, for the infallible remedy and vital prescriptions for our time.

I would like to suggest some conceptual framework within which we can begin to utilize the most complete and thorough Medical Tradition, that of the Holy Prophet Muhammad (As), and arrive at a renewed view of man as healer and man as patient.

God says:

"If God touch thee with affliction, none can remove it but He;" (Qur'an 6:17)

"O mankind! there hath come to you a direction from your Lord and a healing for the (diseases) in your hearts, —and for those who believe, a Guidance and a Mercy." (Qur'an 10:57)

In Surah Bani Isra'il, this idea is even made more clear:

"We send down (stage by stage) in the Qur'an that which is a healing and a mercy To those who believe..." (Qur'an 17:82)

Similar revelations are contained in other verses in the Qur'an, notably in Surah 26, verses 80 and 81; 41, verse 44; Surah 16, verses 53 and 69. These are the specific references to guide mankind to the latest revelation and complete code for the conduct of human life on earth, in order to maintain or regain health.

Muslim physicians have a very special obligation. They should be the living models for others to live in harmony with these commands of our Creator. The prophet has left us a perfect example as conveyed through the *Sahih* Traditions of Muslim and Bukhari.

The Qur'an and Hadith provide us not only with general vague guide-

lines concerning health but they also give us specific instructions on health, both public and private health, even to the contamination of food by pets!

As Muslims we are well aware of a fact that the most complete system of "natural medicine" ever devised has been extant for 1,400 years, presented in the fullest and miraculous order of Divine commands from Allah, and *lived out in example* by the most profound human beings in history. And it is by this example that the present health crisis maybe met. For this is, above all, a crisis of faith, of faith in the physician, of faith in the human mechanism as a healing process, of faith in the patient, but above all, a cynical loss of faith in God Himself. We have learned from the Hadith of the Prophet (AS), that God did not send down any disease, unless He sent down the remedy for it. The modern man's disease is "loss of faith" in the ultimate sense, and its cure is nothing but "iman" (faith).

In this realm of faith there is no incurable disease, including the so-called "terminal" cancers, since giving up hope or "hopelessness" is against Islam. Maulana Jalaluddin Rumi has said in *Fihi Ma Fihi*, that "faith is superior to prayer." For faith is continuous, cannot be omitted for any excuse, and has its own benefit with or without prayer.

The main tenets of *tibb-al-nabi*, or "medicine of the Prophet," of course proceed from this iman and are contained first of all in the usual religious injunctions known as the "Five Pillars of Islam." We wish to review them briefly.

1. **Shahadat.** "*La ilaha il allah; Muhammad-ur-rosoul allah.*" Imam Al-Ghazzali has said, "Illness is one of the forms of experience by which man gains a knowledge of God; as He says, 'Sicknesses themselves are My servants, and are attached to My chosen.' "If one is unable to have faith in the soul, in God, and in the seen and unseen worlds, then how could one expect any success in the fight against other "unseen" things, like microbes and viruses? It is in the first place precisely because people have turned away from the nurturing and feeding of the soul, that disease has taken hold and overpowered their pitiable and shrunken souls.

2. **Salat.** The five daily obligatory prayers are the most magnificent form of food for our soul, as well as being a practical set of physical exercises which, if conducted regularly will banish so many of the common ailments such as lower backpain, arthritis, cervical misalignments, headaches and other complaints or at least greatly reduce their severity if they occur at all.

The recitation of prayers in the Arabic language conveys an added benefit which can be described under the Science of Breath (*nafas*), which holds that the heart is the seat of manufacture of the breath, and the storehouse for the divine potentialities (*sifat*). These potentialities are conveyed about the body by various humors (*akhlat*), which must be kept in harmony.

The transmission of sound is important for maintaining or building health. After all, the Command for the Qur'an was, and is, "Recite!" For example, the long sound of *alif* ('alif' as in father) is known to vibrate in the heart plexus and stimulate the feelings of power, concentration, majesty and so forth.

The sound of "ya" or long 'e' in English (as in seen), travels up the nasal septum and stimulates the root of the pineal body, acknowledged by most Western biologists to be a vestigial remnant of a third eye, or light-sensitive organ. Even though its specific function is not known to science, a quick review of words and phrases in *salat* will show the place Allah ta'ala has found for stimulation of this body throughout the day.

3. **Ramadan.** "Fasting (*sawm*) is the best medicine," is the claim of the latest natural food fadists, but this statement too comes from the comprehensive Tradition on Medicine of the Holy Prophet Muhammad (AS). The burden upon the digestive organs, stressed further by addition of so many chemical additives to food, stress toxins and consistent dietary indiscretion, places a very great labor upon the detoxifying systems of the body—primarily upon the liver—which may ultimately be seen to be the leading cause of degenerative disease.

4. **Zakat.** Every physician knows that if the subject of disease is looked into deeply enough, nearly all diseases can be said to originate in the mind. The psychological fears associated with not knowing if, or how, one is going to provide for one's dear ones, often leads to excessive drinking, depression, and suicide, among other things. The humane system of community preservation provided for by *zakat*, is a necessary component of any truly humane society, and therefore is incumbent upon all Muslims. In addition, there is the added benefit of increasing one's humility and preventing one from becoming selfish and greedy, characteristics so prevalent in modern society, which harm others by withholding something from the less fortunate peoples' needs and affections.

5. **Hajj.** The pilgrimage for every physically and financially able Muslim usually is performed by adults who have met their responsibilities in life, and have in one sense "earned" this final religious journey. It gives the mature in life a hope for the future, a very great and exalted final purpose and direction, a final reordering and reaffirmation of *iman* as one approaches the transition from human life on earth. While it is surely the best provision against senility, even the young who are fortunate to perform the *Hajj*, the benefits are perhaps still greater.

Any interested person can go much deeply into these topics, and they are repeated here only to suggest a mere glimpse of the superior benefits to be gained from following the injunctions of the way of life known as Islam. Advanced study of Islam yields rich source material in any field of human

thought and behavior. What needs to be stressed here, is that even if all of these acts were not called by the name "Islam," they would, if prescribed and enforced as a mode of treatment, produce profound effects entirely beneficial. In my own work, I often suggest to non-Muslims who come for health guidance, the movements of *salat*, cleansings of *wudu*, and certain elements of fasting, under the rubric of "health building." The results under such a regimen, which is nothing more than suggesting Islam, have been truly astonishing, with recovery of many serious chronic and degenerative diseases.

Can we now construct—with the foregoing as a foundation—a model for the Muslim spiritual physician, or simply, the *hakim* in the fullest and deepest sense of that word, as a new, or reborn figure who can function not only to meet the specific needs of the evergrowing numbers of Muslims in the West, but also as a model for the medical paraprofessional to work with modern doctors to the benefit of the patient? To what extent can modern allopathic medicine be allied with such a model? What are the educational and licensing criteria which can reasonably be established for the modern *hakim* in the West?

The first need is to establish a pilot training program for Muslim *hakims*. This would include the primary areas of Islamic religious knowledge, of *shariat*, of the medical bases inherent in the application of what is usually taken as religious duties, and to present these subjects—these measures and rules for living—in a framework which satisfies the highest standards of academic criteria in the American model. This can be accomplished during a training period of two years of class work, with the basic curriculum to include anatomy and physiology, organic chemistry, botany and plant pharmacology (herbology), ligamentous tissue adjustment, dietetics and training in first aid and acute symptomology.

To answer such a need, primary textual materials must be developed from those already in use, but keyed to and selected for the Islamic basis of the instruction. Translation of more than one of the classic Islamic medicine texts is a *sine qua non*, which may be easiest from the Urdu materials which are widely available and already in use in *hakimi* curricula in Pakistan. Moreover, works of such import as *Qarabaadin-e Kabir*, *Qanun-ul-Tibb*, the *Formulary of Al-Samargandy* and a few other works are an immediate need. Such texts could be available within twelve months if funding were made available, insha allah.

In addition to the more or less hard science aspects of such a curriculum, the ideal of Muslim physicians—spiritual physicians—must be taught by example, by precept. For this purpose, practicing *hakims* from predominantly Muslim countries can be brought in as visiting professors on a one to four semester basis. Likewise, it would be of value to the students, to visit and observe traditional *hakims* at work in Islamic cultures.

It is suggested that following the two year program of education in the hard sciences and other course work, at least three years be spent under direct supervision of a practicing hakim, to ensure that each student has gained a mastery of fundamentals before undertaking independent practice.

The application of this training to practice in and among Muslim communities can best be effected in the context of the *masjid* in each city. It is well-known that the mullah or imam is the most frequently visited person in the pathway to health among traditional Muslim cultures. A recent study in Afghanistan showed that for each single visit to a modern pharmacy or medical doctor, the patient visited the mullah ten times.

There exists a very special role for those Muslim physicians who have been trained in Western medicine, and are licensed for its practice. For the ordinary American doctors reject out-of-hand any religious basis for treatment, and the use of herbs are considered in the realm of the "quack." But, there is overwhelming scientific support for using herbs and natural religious modalities for treating the sick.

The intention of establishing a specific Islamic modality in America is not to compete with or disparage medical doctors. It is rather to provide the supportive counseling and day-to-day guidance as an integral part of one's *deen*, which cannot be practiced under existing models of medicine. The diseases of alcoholism and mental illness, for example, will respond well to natural herbs, detoxification and spiritual counseling, but the requirements in terms of time are severe. A *hakim* can fill this need better than any institutional form of therapy, or any known drug therapy. For the diseases of today are the diseases of the soul, and demand fully supportive environments and an Islamic way of life to effect a true cure. Drugs can never remove the causes of loneliness, estrangement of family members, lack of self-worth, pressures of environment—but Islamic medicine can. Medical doctors must be available for consultation by patient and *hakim*, whenever concern for pathology arises.

Some may question the licensing requirements for hakims trained under this program. The first amendment to the Constitution of the United States exempts the "practice of religion", from regulation, and the Supreme Court has consistently held that Congress shall make no laws regarding the practice of religion. Lesser judicial bodies, and statutory laws, have also exempted religious practice from medical practice acts. Since the hakims would be an integral part of the Islamic religious community, in fact at its very core, there would be no interference from regulatory agencies of the state. As the training of initial classes proceed, there may be developed some form of recognition certificate from the IMA² or similar bodies. In any event, criteria for practice would be well established.

²Islamic Medical Association *

A glance around the society we live in compels one to realize that there must be developed some alternative therapeutics to the allopathic model as it currently exists. There has been a proliferation of a truly amazing array of "natural" therapies, some of which are clearly based on wrong assumptions, and mislead people into further degeneration of the mental and physical health. As Muslims, we possess the latest and most complete Medical Tradition and are rapidly approaching the time when we may be in error to fail to actively promote this system and way of life. We cannot assume that all of the edifice of research of Islamic Medicine is simply rank superstition, based as it is upon the Holy Qur'an? There will no doubt that there need to be some adjustments made in the time, manner and place where we choose to present this system, but can any excuse be offered as valid to delay, when the cost is life itself, and the alteration of suffering of so many people?

Eventually, with a fully-functioning Islamic Medical Research Institute, along with the many dozens or hundreds of Muslim *hakim* practitioners, Muslims in America and the West can create the model of medical treatment for the future, secure in the knowledge and Promise of Allah t'ala, that it is the only fit conduct for our lives on this earth, to follow His commands, and nurture this tendency in our fellow men, in our children and in ourselves.

The utilitarian social and medical systems pass out of vogue because they are based upon the ideas of man, and the ideas of man can never be eternal, cannot cover the whole ground of man's existence and nature. But ours is an ideal, of true healing and remedy of the soul and body, exemplified by the last and greatest of prophets, Muhammad (AS). Islamic medicine takes up the individual, but evokes the help of the Infinite.

We therefore see that there is an indisputable necessity for a religious basis to work in healing and health, and this will continue to be so if mankind wishes to be successful and happy. All else is a mirage, misleading and absurd, empty rhetoric, in light of the matured experience of our ancestors in the faith of Islam.

What is needed today, more than all the advancements of science, is a return to the simple, eternal laws for living, as shown in the way of life of Islam. Resurrection of our health, of body, mind and soul, utilizing the medical traditions of Islam, as shown by the light of Islam the Prophet Muhammad (AS), is the true need for the salvation of the plagues which now disturb the souls of men.

In this uphill task, everyone will be required to make concessions and sacrifices, to earn the goodwill of mankind, and blessings of Allah.

THE ISLAMIC PERSPECTIVE IN MEDICAL ETHICS¹

Shahid Athar, M.D.

ABSTRACT

With the population of Muslims in the USA growing to about 8 million now and Muslim physicians to about 18,000 American physicians will have to deal with medical ethics concerning Muslim patients.

The introduction of new technology in medicine in areas of sustaining life support systems, organ transplantation, bio-technical parenting and acquired immune deficiency syndrome, have presented new questions, and affected our outlook in medical ethics. Muslim patients, their families and their physicians need to update their current knowledge and the Islamic perspective in these areas.

An attempt has been made to present the Islamic perspective as mentioned in the Qur'an, the holy book of Islam.

The introduction of modern medical technology has posed perplexing new questions for Muslims, the answers to which they are still seeking. The Muslim masses are ignorant and naive, behaving like the ostrich which, on seeing a danger, buries its head under the sand and thinks that it is safe. In general, Muslims are split into two groups: One group is educated and modernized and would accept anything labelled as scientific, irrespective of religious or moral considerations, the other group of so-called Islamic scholars have knowledge of Islam, but not of medical sciences. They are quick to give their opinion on everything. However, both groups should be reminded that Islam is not a religion of personal opinions.

"It is not fitting for a believer, man or woman, when a matter has been decided by God and His Prophet, to have any option about the decision. If

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anyone disobeys God and His Apostle, he is indeed on a clearly wrong path". (Qur'an 33:36)

Muslims living in an advanced western society cannot stay aloof from the issues surrounding them. All factors affecting non-Muslims, sooner or later, directly or indirectly, will affect them too. The basic question in medical ethics is "Who is the giver of life and death?" Should man control his life and death and that of other humans? Man now "thinks" he can create life or take it away, prolong life (or misery). Are physicians to serve the creatures of God, or act as God themselves? The Qur'an reminds man of his lowly origin and real position in life:

"Does not man see that it is we who created him from sperm? Yet behold! He stands as an open adversary! And he makes comparisons for us, and forgets his own creation. He says who can give life to (dry) bones and decomposed ones? Say "He will give them life who created them for the first time, for He is versed in every kind of creation". (Qur'an 36:77-79)

THE CURRENT MEDICO-LEGAL AND MORAL ISSUES AND THEIR ISLAMIC PERSPECTIVE

1. The Right To Live And To Die:

The care of the terminally ill is becoming very expensive. It is costing billions of dollars to keep patients alive in a vegetative state in intensive care units. The concept of euthanasia (mercy killing) is being revived. In 1987, 23,000 cases occurred in Holland. The question is who determines (the unconscious patient, the family, or the doctor) that the plug should be pulled and the life support system be stopped? What is the definition of death? Is the living will justifiable? Is stopping the life support system an act of mercy, a medical decision, a murder, or just a financial decision?

The Islamic Perspective:

Islam does not believe in prolonging life as everyone has been created for a certain life span. Scientists are to assist, but not replace God in the creation of death of human beings. The Islamic morality starts in the womb and extends to the tomb. Islam places great emphasis on the sanctity of life and the reality of death.

"If anyone killed a person, unless it is for murder or spreading mischief on earth, it would be as if he killed all of mankind. And if anyone saved a life it would be as if he saved the lives of all mankind". (Qur'an 5:35)

"Every soul shall have a taste of death". (Qur'an 2:35)

"No soul can die except by God's permission". (Qur'an 3:185)

Thus, while Islam gives importance to saving lives (medical treatment or otherwise) it makes it clear that dying is a part of the contract (with God) and the final decision (of term) is up to God. The quality of life is equally or more important than the duration of living.

My humble suggestion is that the physician and the family should realize their limitations and not attempt heroic measures for a terminally ill patient or to prolong artificially a life (or misery). The heroic measures taken at the beginning of life (i.e. saving a premature baby) may be more justified than at the end of a life span, though each case should be considered on individual basis.

Islam is categorically opposed to euthanasia (mercy killing) and regards it as an act of murder. We do not see the difference between the gun used by a husband for his dying wife and the syringe used by the physician for his dying patient. Both are weapons of death, no matter what the intentions of the killer was.

2. The Organ Transplantation

Nowadays many diseased organs are being replaced by healthy organs from living donors, cadavers and from animal source. Successful bone marrow, kidney, liver, cornea, pancreas, heart and nerve cell transplantations have taken place. The incidence is limited only by cost and availability of the organs.

The ethical questions are what are the rights of the living donor, the dead body and the recipient. To prolong a life, does the recipient have a right to take away the organs from the dead? Is the sale of organs justified? Is the taking of animal organs justified? Is accepting organs from aborted fetuses justified? Is the cost of transplantation worth the benefit derived from it? The cost of a heart transplantation alone is \$70,000 now, not including long term care. Will harvesting fetal tissues lead to more abortions?

The Islamic Perspective:

The basic question is who owns our organs, we, our relatives, or our Creator?

A. Animal To Human: If we can kill them for our food and let their meat become our flesh, why can't we use their cornea to give us eyesight?

B. Living to Living: This is like giving a gift at no cost. The sale is prohibited.

C. Dead To Living: This is not permitted since it involves the desecration of the dead body.

3. The Issues In Abortion:

Currently about 2 million fetuses per year or 4000 per day are aborted

in the U.S. The medico-ethical questions are many. Is abortion equal to murder? When is a fetus a living being? What are the rights of the fetus? Who guards those rights? Do both parents (even unwed) have the same rights over the life of the fetus? If life is a gift of God, who are we to take it away? Is killing an infant and the aged and terminally ill the same thing? What should be done with the pregnancy that is the outcome of rape? What is the role of Muslim obstetrician? Is the sale of aborted fetus for transplantation of tissues and organs, or of their delicate skin to make expensive cosmetics, justified?

The Islamic Perspective:

Islam considers abortion of a viable fetus an infanticide except when done to save the life of the mother. Even in this situation every attempt should be made to save both lives. The fetus is alive as a cell from the very beginning, with shaping starting at 4 weeks and movements at 4 months. According to Hadith at 120 days the angel visits the fetus and blows the spirit into it. This coincides with starting of the baby's first movement. The viability of the fetus medically has improved with the development of neonatology. The smallest infant ever saved weighed 4 oz at 3 1/2 months.

The Qur'an refers to abortion in many places:

"Kill not your children for fear of want. We shall provide sustenance for them as well as for you. Verily the killing of them is a great sin". (17:31)

"Kill not your children on a plea of want. We will provide sustenance for you and for them. Come not near shameful deeds whether open or secret. Take not life which God has made sacred except by way of justice and law. Thus He commands you that you may learn wisdom". (6:151)

"The pledge of the believing women that they shall not kill their children". (60:02)

"And when the female infant who was buried alive is asked for what crime she was killed?". (81:2)

The liberated women of today are not killing their infants for fear of want, or for the shame of the birth of a girl, but rather to enjoy the life of sexual freedom.

"Such as took their way of life to be mere amusement and play and were deceived by the life of this world. That day We shall forget them as they forgot the meeting of this day of theirs and as they were bent upon rejecting Our signs". (Qur'an 7:51)

4. Issues In Bio-Technical Reproduction

Infertility and the desire of a couple to have a child of their own is not

a new problem. However new techniques to solve this have added a new twist. Now we have successful technology to fertilize an egg outside the uterus (test tube babies) and inject sperm into the uterus from the husband or a surrogate male donor, take the ovum of a woman and fertilize it with the sperm of her husband and inject it into the uterus of another woman for incubation.

The questions are:

A. Is marriage a legal contract between a man and a woman or is it a sacred covenant between the two, and God is the witness of such?

B. Was the child born of an intact legal marriage or outside the marriage?

C. In the case of the surrogate father, who is the real father and does the child have the right to know who he is?

D. In case of the surrogate mother, who is the real mother, the one whose ovum is being used, or the one who lets her uterus be used?

E. Is renting a uterus for this purpose allowed or justified?

F. A woman married or single can technically have one child per month if she lets her ovum be fertilized by different sperm incubated each month in a hired uterus. This will save her the pains of pregnancy, labor and lactation. Is this right?

The Islamic Perspective:

In Islam the marriage of a man and a woman is not just a financial and physical arrangement of living together but a sacred contract, a gift of God, to enjoy each other physically and continue the lineage.

"And God has created for you mates from among yourselves, and made for you, out of them, sons and daughters grandchildren. And provided for you sustenance of the best: will they then believe in vain things and be ungrateful to God's favors?" (Qur'an 16:72).

"Among His signs is that He created mates for you from among yourselves, so that you may find tranquility with them, and He has put love and compassion between you. Verily in this are signs for people who reflect". (30:21)

The Prophet (SAW) has emphasized marriage by saying:

"Marriage is my tradition. He who rejects my tradition is not of me". In fact he described marriage as half of religion, the other half being God-consciousness. As such introduction of any bio-medical technique into this sacred contract of marriage is a violation of Islamic law.

Some prophets were childless and asked God to give them children (ref. Qur'an 19:2-7 and 21:89-90 for the prayers of Zakariya and 51:28-39 for the story of Abraham and Sarah). This means that one may seek parent-

hood in a legitimate way only, recognizing that Allah above controls it.

"To Allah belongs the dominion of the heavens and earth. He creates what He wills, He bestows (children) male or female, or He bestows both males and females, and He leaves barren whom He pleases: for He is all knowledgeable, all powerful". (42:49-50)

The biotechnical parenting is, however, permissible if it is within an intact marriage i.e. during the life span of marriage. Artificial insemination using the husband's sperm, fertilized in the uterus of the wife or the test tube is allowed.

Surrogate motherhood is not acceptable because of two questions:

A. Who is the mother?

B. What will be the child's lineage.

"None can be their mother except those who gave them birth. (Qur'an 58:2)

"It is He who created man from water, then has He established the relationship of lineage and marriage, for your Lord has power over all things". (Qur'an 25:54)

Islam recognizes the sacredness of the womb (uterus).

"O mankind! Revere your Lord who created you from a single person and created, of like nature, his mate, and from them twain scattered (like seeds) countless men and women. Revere God through whom you demand your mutual rights and (revere) the womb (that bore you), for God ever watches you. (Qur'an 4:1)

5. The Ethical Questions About AIDS Patients

AIDS is spreading like a plague. About 200,000 cases have been reported in the USA alone, half of whom have already died. One case is being reported every 14 minutes. The Center for Disease Control officially estimates that 1.5 million Americans are infected with HIV. It is projected that 365,000 active cases will be reported in the USA by 1995. According to Dr. James Curran of The Center for Disease Control in Atlanta the figure may be as high as 440,000. You don't have to be homosexual to get AIDS through sexual transmission and sharing needles with IV drug users is the main mode of transmission. 18,000 hemophiliacs have AIDS now due to blood transfusions. 15% of all AIDS victims are women and about 540 children are reported to have the infection. The spread of AIDS is changing the sexual life style of single women and men. AIDS has been reported in 152 countries. Next to the USA, the highest numbers in the western countries are France, West Germany and Britain. The total number of AIDS victims in the world is 177,965 now.

The economics of AIDS are startling. In the USA, the medical care cost of AIDS will rise from \$1.8 billion in 1986 to \$8.5 billion in 1991, the

research, education and screen from \$542 million to \$2.3 billion and a total cost from \$7 billion to \$55.6 billion.

The Ethical Questions Related To The Care of AIDS Patients Are:

1. Who will pay for the cost of AIDS cases since insurance companies will not insure them?
2. Should AIDS patients be quarantined and forced to change their lifestyle?²³ Should HIV drug users be given free clean needles, syringes and drugs?
4. Should HIV positive carriers carry an ID card?
5. Should someone be tested for HIV without his knowledge and what should be done with positive results?
6. Does paying for AIDS cases by the public or the government mean that they endorse the lifestyle of the patients?

The Islamic perspective, though not clearly defined, would be the prevention of the disease and after its occurrence treating it like any other disease, i.e., tuberculosis, syphilis, or smallpox. We never question the lifestyle of patients with other common diseases i.e. diabetes, hypertension, coronary heart disease in order to discriminate them or restrict their care. AIDS may be "a wrath of God" because of certain lifestyles, but many "innocent" people are affected by it. Therefore, they should not be penalized. In each community every attempt should be made to prevent the spread of the disease but once it has affected an individual full attention and care must be given to lessen his or her suffering and maintain the dignity and quality of life.

Conclusion:

I have tried to present ethics as it is being practiced with questions for those involved. I have not attempted to give detailed accounts of each biomedical techniques. I am sure most of the readers, medical or non-medical have some knowledge in this area. With 8 million Muslims in the USA and 18,000 Muslim physicians, it will be wise that non-Muslim physicians, clergy and law makers become acquainted with the Islamic perspective of medical ethics. I strongly recommend that at each institution dealing with question of life and death, a local Muslim physician be on the medical ethics committee.

Selected References

1. The Holy Qur'an: Translated by A. Yusuf Ali, Published by Amana Corp, Washington, DC.
2. William, Robert H., "To Live And To Die - When, Why And How, Published by Springer - Verlag, New York.
3. "The Physician And The Hopelessly Ill Patient" Legal, Medical And Ethical Guidelines - Published by Society For The Right To Die- New York.
4. "Right To Live And Right To Die" - Interfaith Symposium Of Islamic Medical Association, Houston, Texas, Nov. 87.
5. Hathout, Hassan "Islamic Perspective In Obstetrics & Gynecology" - Published by Islamic Organization For Medical Sciences.
6. "Bio-Technical Parenting" - Interfaith Symposium Of Islamic Medical Association, Anaheim, CA. July 88.
7. "Moral And Ethical Issues In Medicine" 6th Annual Symposium, St. Vincent Hospital, Indianapolis, Indiana, Dec. 1987.
8. Gaveebo, Hassan "An Islamic Code of Medical Ethics" - Journal Of Islamic Medical Association, Vol. 20, 1988, Page 21-24.
9. "Islamic Medical Ethics" Special issue of Journal Of Islamic Medical Association - January 1988.
10. Athar, Shahid "AIDS: The 20th Century Plague And What Muslims Should Know About It," Crescent International, Toronto, Nov. 1987.
11. Scitovsky, Anne A. and Dorothy P. Rice "Estimates Of The Direct And Indirect Costs of AIDS In USA In 1985, 1986, 1991- Public Health Report 1987, Vol. 102 No. 1 Page 5-17.

APPENDIX 1

THE OATH OF A MUSLIM PHYSICIAN

Praise be to Allah (God), the Teacher, the Unique, Majesty of the Heavens, the Exalted, the Glorious, Glory be to Him, the Eternal Being Who created the Universe and all the creatures within, and the only Being Who containeth the infinity and the eternity. We serve no other god besides Thee and regard idolatry as an abominable injustice.

Give us the strength to be truthful, honest, modest, merciful and objective.

Give us the fortitude to admit our mistakes, to amend our ways and to forgive the wrongs of others.

Give us the wisdom to comfort and counsel all towards peace and harmony.

Give us the understanding that ours is a profession sacred that deals with your most precious gifts of life and intellect.

Therefore, make us worthy of this favored station with honor, dignity and piety so that we may devote our lives in serving mankind, poor or rich, literate or illiterate, Muslim or non-Muslim, black or white with patience and tolerance with virtue and reverence, with knowledge and vigilance, with Thy love in our hearts and compassion for Thy servants, Thy most precious creation.

Hereby we take this oath in Thy name, the Creator of all the Heavens and the earth and follow Thy counsel as Thou hast revealed to Prophet Muhammad (pbuh).

"Whoever killeth a human being, not in lieu of another human being nor because of mischief on earth, it is as if he hath killed all mankind. And if he saveth a human life, he hath saved the life of all mankind." (Qur'an V:35)

This medical oath which is a composite from the historical and contemporary writings of physicians of the Islamic World, was officially adopted by the Islamic Medical Association (I.M.A.) in 1977.

APPENDIX 2

CHARACTER OF THE PHYSICIAN

- The physician should be amongst those who believe in God, fulfill His rights, are aware of His greatness, are obedient to His orders, who refrain from His Prohibitions, and who serve Him in secret and in public.

- The physician should be endowed with wisdom and practise graceful admonition. He should be cheering not dispiriting, smiling and not frowning, loving and not hateful, tolerant and not edgy. He should never succumb to a grudge or fall short of clemency. He should be an instrument of God's justice, forgiveness and not punishment, coverage and not exposure.

- He should be so tranquil as never to be rash even when he is right. Chaste of words even when joking ... tame of voice and not noisy or loud, neat and trim and not shabby or unkempt ... conducive of trust and inspiring of respect ... well-mannered in his dealings with the poor or rich, modest or great ... in perfect control of his composure ... and never compromise his dignity, however modest and forbearing.

- The physician should firmly know that 'life' is God's ... awarded only by Him ... and that 'Death' is the conclusion of one life and the beginning of another. Death is a solid truth ... and it is the end of all but God. In his profession the physician is a soldier for "Life" only ... defending and preserving it as best as it can be, to the best of his ability.

- The physician should offer a good example by caring for his own health. It is not befitting for him that his "do's" and "don'ts" are not observed by himself. He should not turn his back on the lessons of medical progress, because he will never convince his patients unless they see the evidence of his own conviction ... God addresses us in the "Qur'an" by saying, "and make not your own hands throw you into destruction". The Prophet says, "Your body has a right on you" ... and the known dictum is "no harm or harming in Islam".

- The physician is truthful whenever he speaks, writes or gives testimony. He should be invincible to the dictates of creed, greed, friendship or authority pressurizing him to make a statement or testimony that he knows

is false. Testimony is a grave responsibility in Islam. The Prophet once asked his companions, "Shall I tell you about the gravest sins?" When they said "yes," he said "claiming partners with God, being undutiful to one's parents ... "and after a short pause he repeatedly said "and indeed the giving of false talk or false testimony."

- The physician should be in possession of a threshold-knowledge of jurisprudence, worship and essentials of Fiqh to enable him to give counsel to patients seeking his guidance about health and bodily conditions with a bearing on the rites of worship. Men and women are subject to symptoms, ailments or biological situations. For instance, women during pregnancy may wish to know the religious ruling pertaining to prayer, fasting, pilgrimage, family planning, etc.

- Although 'necessity overrides prohibition' the Muslim physician-nevertheless-should spare no effort in avoiding the recourse to medicines or therapy or surgery, or medical or behavioral dictates that are prohibited by Islam.

- The role of a physician is that of a catalyst through whom God, the Creator, works to preserve life and health. He is merely an instrument of God in alleviating people's illnesses. For being so designated, the physician should be grateful and forever seek God's help. He should be modest, free from arrogance and pride and never boast or hint at self-glorification through speech, writing or direct or subtle advertisement.

- The physician should strive to keep abreast of scientific progress and innovation. His zeal or complacency and knowledge or ignorance, directly bear on the health and well-being of his patients. Responsibility for others should limit his freedom to expend his time. As the poor and needy have a recognized right in the money of the capable, so the patients own a share of the doctor's time spent in study and in following the progress of medicine.

- The physician should also know that the pursuit of knowledge has a double indication in Islam. Apart from the applied therapeutic aspect, pursuit of knowledge is in itself worship according to the Qur'anic guidance, "And say ... My Lord ... advance me in knowledge" and "Among His worshippers ... the learned fear Him most ..." and "God will raise the ranks of those of you who believed and Those who have been given knowledge."

(Taken from Islamic Code of Medical Ethics Kuwait Document, International Organization of Islamic Medicine 1981).

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